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New Tonnage Is Spreading Out

Buying of Steel Now Coming From a Growing Number of Sources—Future Contracting and Buying for Stock Appear—Price Situation Firmer but Steel Corporation Quotations Unchanged—General Production Gains

DIVERSITY of tonnage is becoming more marked in iron and steel and is regarded hopefully. Steel bar business in the Chicago district is coming from so many sources that deliveries have fallen back despite heavier production which is expressed by the fact that the Gary plant has all its bar capacity engaged for the first time in a year. Sheet demand is expanding with some indications of a buying movement. Tonnage of size in full-finished sheets from the automobile industry, however, is conspicuously lacking. Tin plate bookings are considerably better than anticipated at this season. Both merchant pipe and wire tonnage is growing.

Production in general continues on the upgrade. Chicago remains the most active district with the Illinois Steel Co. running at 65 per cent. At Pittsburgh, the Carnegie Steel Co. is up to 60 per cent and the Jones & Laughlin Steel Co. somewhat above that. Mahoning valley independent works are at 76 per cent of steel capacity this week. Eastern mills still are lagging but are gaining ground.

Two developments of particular interest in the situation have been the appearance of some contracting for future delivery in various products by consumers principally of the manufacturing class and by increased buying by jobbers for stock purposes. Both of these activities which have been generally absent from the market for some months, reflect growing confidence in prices and in the trade outlook. Chicago especially reports heavy sales to jobbers and similar business has developed at Cleveland, in the East and elsewhere. Some of this tonnage undoubtedly has been stimulated by recent low prices by certain independent mills. In the East combination lots of plates, shapes and bars are understood to have gone under 1.30c Pittsburgh.

Steel Prices Firmer

To what extent the market on plates, shapes and bars actually has advanced due to the general action of various independent mills is questionable. Steel corporation mills continue to quote unchanged at 1.40c Pittsburgh and some independent producers, while professing to be quoting higher, still will accept that figure which is considered to be the going level on desirable business. At the same time, tonnage accepted this week under 1.40c and principally at 1.35c, has been less and this price apparently is disappearing. A larger number of smaller orders is going at 1.50c Pittsburgh. Apart from plates, shapes and bars, the general trend of steel prices also is toward firmer conditions.

Roads Still Buying

The railroads continue probably the market's most consistent factor. Their purchases are varied, and of good tonnage. One important new project to come up is an ore dock for the Great Northern at Superior, Wis. requiring about 12,000 tons. More bridge work is up. The Northern Pacific placed 2700 tons and the Rock Island wants 1600 tons. From 10,000 to 15,000 cars now are actively being figured. The 2000 to 4000 70-ton cars for the Norfolk & Western will call for 22,000 to 44,000 tons of plates, alone. The Pennsylvania is inquiring for 250 passenger cars.

A fair volume of buying in pig iron continues with some districts more active than others. Furnace bookings in March to date generally are well ahead of February. Valley basic is slightly stronger with two small sales at $18, an advance of 25 cents.

Structural awards of the week total about 15,000 tons, principally miscellaneous, with fully 27,000 tons in new work offered. Among more important new jobs are the Beldon hotel, Chicago, 4000 tons and the municipal pier, Philadelphia, 4000 tons.

A virtually unchanged position of THE IRON TRADE REVIEW's composite market average of 14 iron and steel products again is shown this week. The average is $32.87 compared with $32.86 last week, $32.81 two weeks ago, and $27.93 for March 1913.

Scrap Market Advances

Signs of a genuine upturn are given by the scrap market. Buying of heavy melting steel by steelmakers has developed in various districts at 50 cents to $1 higher. Valley mills are credited with taking 30,000 to 40,000 tons at $15 to $15.50. At St. Louis, as much as $3 advance in some grades is reported.

Business Trend and Chart Section Page 739

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A Labor Lesson from Abroad

UNION labor leaders hardly could be expected to have much international vision, yet some of these men must keep more or less informed about what is going on in labor circles in other countries. In such a case, ten minutes study of the history of the railroad and coal miners' unions in Great Britain during the past two years should be sufficient to put a stop to any wild ideas of successfully prosecuting either simultaneous or separate coal and railroad strikes in the United States this spring.

Before the leaders of American unions commit their followers to any such suicidal folly they had better note what has happened in Great Britain to much more powerfully organized unions which have already tried this same game.

Unlike the United States, where there are many open shop mines, the British coal mining industry is 100 per cent unionized. Last year a three months' strike was essayed to prevent wage reductions. While it lasted it was completely effective. Yet it was a lost battle for the strikers. They returned to work minus the three months' wages, accepted the wage reductions they had previously resisted; and today they are working for about 40 per cent less wages than the wartime peak. Furthermore, the employers have insisted on and obtained a material improvement in the per capita production of coal.

These are the results in a country where miners' and all other unions are infinitely stronger than in the United States. America also possesses greater economic strength than Great Britain to resist such an assault on its industrial peace and liberty.

As for a railway strike, the British effort in this direction in 1919 was fully as disastrous to the unions as the coal strike. It resulted not in increased wages, but in a sliding scale arrangement based on the cost of living index figure, under which the men are now getting less each month.

Although the principal British labor unions spent three years building up an organization known as the Triple Alliance, with vast funds, for the express purpose of engineering a simultaneous strike of railway employes and coal miners, into which the waterside workers also were to be drawn, the combination failed utterly to function at the critical moment. In fact, the only result has been the annihilation of the Triple Alliance, and greater dissensions between the British labor unions.

Strikes against the selfish aggression of individual employers may be successful, but British experience in the past three years has amply proved that the most powerful organization cannot win a strike against the economic trend, even when provided with a tremendous war chest from which to pay strike benefits for several months.

Such struggles are doomed before they commence. They can succeed only in bringing misery to the men involved and in wrecking and impoverishing the industries on which the former depend for their daily bread.

Where Integrity Is a Factor

WITH users practically confining their machine tool purchases to secondhand equipment, it is well for them to remember that while the questions of price and of the builder are important, another major factor concerns the integrity of the dealer. For years, many important buyers of machine tools avoided purchasing secondhand equipment, principally because they had been worsted by unscrupulous dealers.

In the not distant past, it was a favorite trick of unscrupulous dealers of secondhand equipment to "doctor" a tool, falsely representing it to a buyer as being slightly used and practically as good as new. On the surface the tool appeared as represented and after a cursory inspection, the user would buy. However, when the tool was delivered to the buyer's shop he would discover after a few jobs, that the base was cracked, the ways were out of line, or the bearings had been burned out, or

something of that nature was wrong. In selling the machine the dealer was not looking for a customer. He simply was trying to make a sale.

While, as in all lines of enterprise unscrupulous individuals are to be found in the secondhand machinery trade, the business has been developed to its present important extent by fair and sound business methods as practiced by the honest dealer who is in the great majority. Some of the reputable dealers even will go so far with a customer as to lose a sale rather than dispose of a tool under the slightest misrepresentation. It is dealers of this type users should seek out when they are considering the purchase of secondhand machinery.

Where Figures May Mislead

EXPRESSIONS of disappointment in some quarters over the falling off of total orders in February reported by the United States Steel Corp. suggests the wrong interpretation to which these figures are susceptible unless they are carefully examined. An increase in total orders necessarily is not a sure sign of improvement. To illustrate how this works out, it has been repeatedly pointed out that the mills could be shut down completely and the unfilled orders would be certain to show a good gain even in the slowest kind of a market. Yet, this scarcely could be considered an index of a wholesome trade condition.

After all it is the tonnage shipped that supplies the gage of market and consumptive activity. A mill operates only as it receives specifications from the buyer to manufacture and ship for it is a fundamental principle of the steel business that little material is rolled for mill stock.

It so happens that the Steel corporation produced and shipped more tonnage in February than for a number of months past. Therefore a moderate falling off of total bookings actually was a favorable sign for the liquid condition of an order book is more important than mere size of tonnage.

Penalizing Welfare Work

THE reason for some of the difficulties in the relationship between management and employes may easily be traced to narrow-mindedness on the part of those who frame and interpret state laws. Recently, an industrial nurse in Fall River, Mass., treated a mill worker for an injured hand and after the patient had completely recovered, the state board of registration in medicine started suit to bring the nurse to trial for overstepping her particular province in bringing the patient to complete recovery. The law provides that a nurse may not render service beyond first aid, except under supervision of a registered physician, and certainly this creates a situation which hardly seems possible in the present day and age. The account of the affair reads as if it had been misplaced by a hundred years or more. However, the statement is confirmed by Dr. Nathaniel R. Perkins, assistant secretary of the board. Throughout Massachusetts there are hundreds of industrial plants where nurses are employed to treat employes. This practice marks one of the longest steps forward in the human relationship between management and employes and certainly any law which interferes with the work of these nurses is a disgrace not only to the state but to the entire nation. It is hardly conceivable that serious minded legislators would cause a nurse to face prosecution because she had helped restore a mill worker's hand to usefulness, but that is actually what has happened. Plant owners are often accused of mercenary methods in conducting their business. Yet here is a case where state legislators have tied the plant manager's hands in one of his most far reaching attempts at good will and helpfulness toward employes.

An Iron Year Without Parallel

EVERY fresh instalment of statistics which comes out accents how extraordinarily depressed the condition of the iron and steel industry was in 1921. Such a conclusion is strikingly apparent in the official figures of pig iron production for 1921 just put forth by the American Iron and Steel institute. The statistics compiled by the trade papers previously had made the general totals pretty well known and understood, but the official figures in detail afford some interesting comparisons.

The total for the year of all kinds of iron, coke, anthracite and charcoal was 16,688,126 tons, the lowest since 1908, when the output was 15,936,018 tons and prior to that was the lowest back to 1904. It was approximately 42 per cent of the record year of production, that of 1916, and but 53 per cent of the 10-year average prior to 1921. Production in the second half of 1921 was only 7,157,145 tons. Charcoal iron production last year was only 94,730 tons, or the lowest on record extending back to 1854. In no other year on record did the output even approach 100,000 tons. The contracted scope of the market is shown by the fact that only 3,728,019 tons of iron of all grades was made for sale. This compares with 10,724,298 tons in 1920; 9,690,277 tons in 1919; 10,768,540 tons in 1918; and an average of 9,819,573 tons in the 10 years previously. The pig iron market in 1921 therefore was on an approximately 38 per cent basis. The figures show that steelworks production or that made for the makers' own use, made a little better showing than merchant iron output. But the comparison is simply one of degrees.

All in all, it probably will be many years before the extreme conditions of production that prevailed in 1921 will be duplicated.

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

March 15, 1922	March 8, 1922	February, 1922	December, 1921	March, 1921	March, 1913
$32.87	$32.86	$32.86	$33.99	$45.37	$27.93

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Composite Market Record for Nine Years on Page 784

SCRAP PRICES, PAGE 782, WAREHOUSE, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 778

Iron and Steel Prices

Pig Iron

Bessemer, valley	$19.00 to 19.50
Bessemer, Pittsburgh	20.96 to 21.46
Basic valley	18.00
Basic, Pittsburgh	19.96
Basic, Buffalo	18.50
Basic, delivered, eastern Pa.	19.84 to 20.24
Malleable, valley	19.00
Malleable, Pittsburgh	20.96
Malleable, Chicago	20.00
Malleable, Buffalo, furnace	18.50
Malleable, del., eastern Pa.	22.00 to 23.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	21.84 to 22.26
No. 1X, Buffalo	18.50 to 19.00
No. 2 foundry, valley	19.00
No. 2 foundry, Pittsburgh	20.96
No. 2 foundry, Buffalo	18.25 to 18.50
No. 2 foundry, Chicago	20.00
No. 2 foundry, Ironton furnace	19.00 to 19.50
No. 2 foundry, Cleveland del.	19.50 to 20.00
No. 2 foundry, del, Phila.	20.84 to 21.26
No. 2 foundry, N. J. Tidewater	21.54 to 21.96
No. 2X, eastern del. Phil.	21.34 to 21.76
No. 2X, eastern N. J. Tidewater	22.04 to 22.46
No. 2X, eastern del. Boston	23.56 to 24.56
No. 2X, foundry, Buffalo fur.	18.50 to 19.00
No. 2X, Buffalo del. Boston	23.46 to 24.46
No. 2 southern, Birmingham	13.00 to 15.50
No. 2 southern, Cincinnati	19.50 to 20.00
No. 2 southern, Chicago	21.66 to 22.16
No. 2 southern, Philadelphia	23.66 to 24.16
No. 2 southern, Cleveland	21.66 to 22.16
No. 2 southern, Boston	26.16 to 26.66
No. 2 southern, St. Louis	19.94 to 21.72
No. 2X, Virginia furnace	22.50
No. 2X, Virginia Phila.	28.24
No. 2X, Virginia Jersey City	28.66
No. 2X, Virginia Boston	28.58 to 29.08
Gray forge, eastern Pa.	20.00 to 20.50
Gray forge, val. del. Pitts.	20.96
Low phos., standard, valley	30.00 to 31.00
Low phos., standard, Phila.	34.00 to 35.32
Low phos., Lebanon furnace	28.00
Charcoal, Birmingham	30.00 to 32.00
Charcoal, Superior, Chicago	26.00 to 29.00
Silvery Iron 8 per cent base	
Jackson county, O., furnace	27.50
Tennessee, Chicago delivery	Nominal
Ohio brands, Chicago	32.82
Bessemer Ferrosilicon Jackson County, Ohio, furnace	
10 per cent	$36.50
11 per cent	39.80
12 per cent	43.10
13 per cent	47.10
14 per cent	52.10

Ferroalloys

Ferromanganese, domestic 80 per cent, Pittsburgh	$67.82
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	62.50
Spiegel, 18 to 22 per cent furnace spot	25.00 to 30.00
Ferrosilicon, 50 per cent, contract delivered	55.00 to 60.00
Ferrotungsten, standard, per pound, contained	35.00 to 40.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, per pound contained, makers plant	13.50c to 14.50c
Imported ferrochrome, 6 to 8 per cent carbon	10.50 to 11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens	
Connellsville furnace	$3.25 to $3.50
Connellsville foundry	4.00 to 4.75
Pocahontas furnace	5.00 to 6.00
Pocahontas foundry	6.00 to 7.00
New River furnace	6.50 to 7.50
New River foundry	7.25 to 7.50
Wise county furnace	4.25 to 4.50
Wise county foundry	5.50 to 5.75
Alabama furnace	4.00 to 4.50
Alabama foundry	5.00 to 5.25
Alabama pitch coke	8.00
By-Product	
Foundry, Newark, N. J., delivered	$8.59
Foundry, Chicago, ovens	11.25
Foundry, Boston, delivered	10.15
Foundry, Granite City, Ill., ovens	9.50

Semifinished Material

BILLETS AND BLOOMS (4 x 4-inch)	
Open-hearth, Pittsburgh	$28.00
Open-hearth, Youngstown	28.00
Open-hearth, Philadelphia	33.74
Bessemer, Pittsburgh	28.00
Bessemer, Youngstown	28.00
Forging, Philadelphia	37.74
Forging, Pittsburgh	32.00
SHEET BARS	
Open-hearth, Pittsburgh	$29.00
Open-hearth, Youngstown	29.00
Bessemer, Pittsburgh	29.00
Bessemer, Youngstown	29.00
SLABS	
Pittsburgh and Youngstown	$27.00 to 28.00
WIRE RODS AND SKELP	
Wire rods, Pittsburgh	$36.00
Grooved skelp, Pittsburgh	1.40c to 1.50c
Universal skelp, Pittsburgh	1.40c to 1.50c
Sheared skelp, Pittsburgh	1.40c to 1.50c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.40c to 1.50c
Structural shapes, Phila.	1.76c to 1.86c
Structural shapes, New York	1.78c to 1.88c
Structural shapes, Chicago	1.60c
Tank plates, Pittsburgh	1.40c to 1.50c
Tank plates, Philadelphia	1.76c to 1.86c
Tank plates, New York	1.78c to 1.88c
Tank plates, Chicago	1.60c
Bars, soft steel, Pittsburgh	1.40c to 1.50c
Bars, soft steel, Philadelphia	1.76c to 1.86c
Bars, soft steel, New York	1.78c to 1.88c
Bars, soft steel, Chicago	1.60c
Bars, hard steel, Chicago	1.50c
Reinforcing bars, Pittsburgh	1.40c to 1.50c
Bar iron, common, del. Pitts.	1.78c to 2.02c
Bar iron, common, Philadelphia	1.76c to 1.86c
Bar iron, common, New York	1.78c to 1.88c
Bar iron, common, Chicago	1.55c to 1.60c

Hoops, Bands, Shafting

Hoops, Pittsburgh	1.80c to 2.00c
Bands, Pittsburgh	1.70c to 2.00c
Cold finished steel bars, Pittsburgh base	1.80c to 1.90c

Rails, Track Material

Standard bessemer rails, mill	$40.00
Standard open-hearth rails, mill	40.00
Relaying rails, St. Louis	24.00 to 28.00
Relaying rails, Pittsburgh	25.00 to 30.00
Light rails, 25 to 45, mill	1.40c
Angle bars, Chicago base	2.40c
Spikes, railroad, Pittsburgh	2.00c to 2.35c
Spikes, railroad, Chicago	2.48c
Track bolts, Pittsburgh	2.90c to 3.00c
Track bolts, Chicago	3.48c
Tie plates, Pittsburgh	1.70c to 1.90c
Tie plates, Chicago	1.75c to 2.00c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.40c
Plain wire, Pittsburgh	2.25c
Galvanized wire, Pittsburgh	2.65c
Barbed wire, painted, Pitts.	2.55c
Barbed wire, galv., Pittsburgh	3.05c
Polished staples, Pittsburgh	2.55c
Galvanized staples, Pittsburgh	3.05c
Coated nails, per count keg, Pitts.	1.90c

Chain, Piling, Strip Steel

Chain, 1 in. proof coil, Pitts.	5.50c
Sheet piling base, Pittsburgh	1.45c to 1.55c
Hot rolled strip steel, Pittsburgh stamping quality	1.80c to 2.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	3.50c

Sheets

SHEET MILL BLACK	
No. 28, open-hearth, Pittsburgh	3.00c
No. 28, bessemer, Pittsburgh	3.00c
No. 28, open-hearth, Phil.	3.36c
No. 28, open-hearth, Chicago	3.38c
TIN MILL BLACK	
No. 28, open-hearth, Pittsburgh	3.00c
No. 28, open-hearth, Chicago	3.13c to 3.38c
GALVANIZED	
No. 28, open-hearth, Pittsburgh	4.00c
No. 28, bessemer, Pittsburgh	4.00c
No. 28, open-hearth, Phila.	4.36c
No. 28, open-hearth, Chicago	4.38c
BLUE ANNEALED	
No. 10, open-hearth, Pittsburgh	2.25c
No. 10, bessemer, Pittsburgh	2.25c
No. 10, open-hearth, Phil.	2.61c
No. 10, open-hearth, Chicago	2.63c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	71	58½
1 to 1½-inch, butt iron	44½	29½

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, 1. c. l.	53 off
Charcoal iron, 3½ to 4½ inches, 1. c. l.	28 off

Cast Iron Water Pipe

Without War Freight Tax
Class B Pipe

Four-inch, Chicago	$47.10 to 48.60
Six-inch and over, Chicago	43.10 to 44.60
Four-inch, New York	50.30
Six-inch and over, New York	47.30 to 48.30
Four-inch, Birmingham	37.00
Six-inch and over, Birmingham	33.00
Three-inch, Birmingham	43.00

Class A pipe is $4 higher than Class B.
Standard fittings, Birmingham, base, $100.00
6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

	Mar. 15, 1922	Feb. 1922	Dec. 1921	March 1921
PIG IRON				
Bessemer, valley, del., Pittsburgh	$21.21	$21.31	$21.96	$28.96
Basic, valley, del., Pittsburgh	19.96	19.81	20.61	26.56
No. 2 foundry, del. Pitts.	20.96	20.96	22.26	27.96
No. 2 foundry, Chicago	20.00	18.85	20.00	26.00
Lake Superior charcoal, Chicago	26.00	30.50	31.50	38.50
Malleable, valley	19.00	19.00	20.00	26.40
Malleable, Chicago	20.00	18.85	20.00	26.50
*Southern No. 2, Birmingham	15.50	15.35	17.15	25.70
*Southern Ohio, No. 2 Ironton	19.00	19.25	20.00	27.50
Basic eastern del., eastern Pa.	19.84	19.84	20.80	26.20
**No. 2X, Virginia furnace	22.50	22.00	22.50	28.05
**No. 2X, eastern del. Phil.	21.34	21.35	22.00	27.40
Gray forge val. del. Pittsburgh	20.96	20.96	21.56	26.96
Ferromanganese, del., Pittsburgh	67.82	65.32	60.00	89.00
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh	29.00	29.00	30.00	39.60
Sheet bars, open-hearth, Pitts.	29.00	29.00	30.00	39.60
Billets, bessemer, Pittsburgh	28.00	28.00	29.00	38.50
Billets, open-hearth, Pittsburgh	28.00	28.00	29.00	38.50
FINISHED MATERIAL—				
Steel bars, Pittsburgh	1.40	1.40	1.50	2.00
Steel bars, Chicago	1.60	1.52	1.60	2.38
Steel bars, Philadelphia	1.76	1.76	1.85	2.35

*1.75 to 2.25 silicon

	Mar. 15, 1922	Feb. 1922	Dec. 1921	March 1921
FINISHED MATERIAL Continued				
Iron bars, Philadelphia	$1.76	$1.76	$1.85	$2.55
Iron bars, Chicago mill	1.55	1.60	1.65	2.65
Beams, Pittsburgh	1.40	1.40	1.50	2.10
Beams, Philadelphia	1.76	1.76	1.85	2.40
Beams, Chicago	1.60	1.52	1.64	2.50
Tank plates, Pittsburgh	1.40	1.40	1.50	2.05
Tank plates, Chicago	1.60	1.52	1.60	2.40
Tank plates, Philadelphia	1.76	1.76	1.85	2.40
Sheets, blk., No. 28, Pittsburgh	3.00	3.00	2.95	3.90
Sheets, blue anl., No. 10, Pitts.	2.25	2.25	2.25	3.05
Sheets, galv., No. 28, Pittsburgh	4.00	4.00	3.95	5.05
Wire nails, Pittsburgh	2.40	2.45	2.75	3.05
COKE—				
Connellsville furnace, ovens	3.25	2.95	2.80	4.55
Connellsville foundry, ovens	4.00	3.80	4.00	6.05
OLD MATERIAL—				
Heavy melting steel, Pittsburgh	15.00	13.95	14.25	15.00
Heavy melting steel, eastern Pa.	13.25	12.25	11.90	13.40
Heavy melting steel, Chicago	12.00	11.10	11.35	12.55
No. 1 wrought, eastern Pa.	15.50	15.50	15.75	18.70
No. 1 wrought, Chicago	12.25	11.60	12.10	13.50
Rerolling rails, Chicago	12.75	11.50	12.90	13.30

**2.25 to 2.75 silicon

Fair Selling of Iron Continues

Furnace Bookings in March Generally Well Ahead of February—Valley Basic Slightly Stronger at $18—Some Makers Cautious Because of Impending Coal Strike—Buffalo Situation Still Irregular

Philadelphia, March 14.—The pig iron market has reflected less activity the past week than has been the case recently. However, the week's business aggregated around 10,000 tons. This was made up mostly of small and moderate sized lots. Due to recent heavy buying and the condition of uncertainty which may develop with a coal strike, eastern furnaces are not eager to add any further tonnage to their books. In one case, a furnace due to the fact that coke shipments were not as large as specified under its contract, is able to get out only part of its capacity. Two furnaces have withdrawn from the foundry iron market.

One of them, the Robesonia Iron Co. having blown out its furnace Saturday, due to a break in the lining. Two other furnaces no longer are soliciting business.

While some further business which had been outstanding was closed at lower prices during the past week, the market now appears firm at $20 eastern Pennsylvania furnace for No. 2 plain (1.75 to 2.25 silicon) $20.50 for No. 2X (2.25 to 2.75 silicon) and $21 for No. 1X (2.75 to 3.25 silicon). At least 2000 tons of copper-bearing low phosphorus iron was sold during the past week which represents the biggest business for a long time. This went at $28 furnace basis. Copper-free iron shows few sales. Small lots of gray forge have been sold at $19.50 eastern Pennsylvania furnace. Malleable is being held at $21 to $22 eastern Pennsylvania furnace.

Prices Firm at Chicago

Chicago, March 14.—Pig iron is holding firm in this district at $20, Chicago, furnace. Resale iron is no longer appearing and this is one factor of greater strength. Inquiry is better in lots of carloads to 1500 tons. Deliveries are increasing and buying now frequently covers second quarter needs. One day's sales included a dozen lots up to 1500 tons, most of them being for 500 tons and less. A Wisconsin machinery maker closed for 900 tons of foundry iron among three sellers. A Michigan melter wants 1000 tons of southern iron. Each of two inquiries asks for 1000 tons of northern foundry and 100 tons of low phosphorus. Two carloads of silveries and 100 tons of spiegeleisen are specified in other inquiries. Some tonnage of iron is being sold by the Illinois Steel Co. to former customers. Silveries are dull at the market price, with signs of increased quotations.

Buying Movement Still Withheld

Pittsburgh, March 14.—The pig iron buying movement noted in other districts has not yet been duplicated here although occasionally an order of fair size or a sizable inquiry appears. Basic iron is stronger, all $17.75 valley prices apparently having disappeared, leaving the market quotable at $18 valley. Another sale of that grade in addition to the one involving 600 tons made by a Mahoning valley steel producer last week at the $18 figure, confirms this level as the quotable basis of the market. This last sale at $18 calls for 1000 tons and went to a Pittsburgh district consumer. One middle interest which owns considerable basic iron is holding at even higher than $18.25

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and refused an offer of $18 this week on a 1000-ton lot. The prospective buyer so far as can be learned has not closed. For bessemer, no new inquiries are noted. Some single carloads have been disposed of at $19.50 valley which remains the quotable market for makers in that district. An eastern Pennsylvania steel producer is quoting a $19 price f.o.b. its furnace with the same freight rate to Pittsburgh as from the valley. The market on foundry iron continues fairly active. The Standard Sanitary Mfg. Co. in addition to 3000 tons of southern iron purchased for Louisville, Ky. a week or so ago, wants more tonnage for that plant. Also it is negotiating for April tonnage for New Brighton and Allegheny, Pa. plants and these inquiries probably will aggregate around 4000 tons. The Iron City Sanitary Mfg. Co. in addition to the 1000 tons of northern No. 2 foundry bought from two producers as noted last week, purchased 300 tons of southern iron for Zelienople, Pa., at slightly over $15 Birmingham. No. 2 foundry iron (1.75 to 2.25 silicon) still remains quotable at $19 valley although there is a tendency to allow that price to apply only upon tonnages and to name $19.25 valley on single carloads. One Pennsylvania furnace has accumulated a fair backlog and shortly will commence to name $19.25 furnace on lots of less than 100 tons. No interest is shown in malleable or gray forge, both being quotable at $19 valley. While $32 valley still applies to standarl low phosphorus occasionally, the bulk of the tonnage moving is going at $30 or $31 valley.

Smaller Sales at New York

New York, March 14.—Pig iron purchases in this district during the past week were considerably smaller than those of either of the preceding weeks, aggregating no more than 10,000 tons altogether. This tonnage was distributed over a large number of buyers, however, and in fact the number of single orders was much larger than in any one week for some time. Current inquiry aggregates 2500 to 3000 tons and a portion of this involved shipment over the third quarter. Interest in third quarter requirements is beginning to develop. Included in the business of the past week was some tonnage in conjunction with second quarter requirements for shipment over the third quarter. Prices on eastern Pennsylvania foundry again are firm at $20 furnace for 1.75 to 2.25 silicon; $20.50 for 2.25 to 2.75 and $21 for 2.75 to 3.25 silicon. None of the eastern Pennsylvania makers as far as known, now will do lower than this level and there is less disposition to equalize freight rate disadvantages. One eastern Pennsylvania maker which has disposed of its output for sometime ahead, now refuses to equalize. Buffalo foundry continues to be quoted at $18 to $18.50 furnace for both 1.75 to 2.25 and 2.25 to 2.75 silicon.

New England Buying Continues

Boston, March 14.—The buying movement in pig iron in New England which started about two weeks ago continues along fairly favorable lines, although the tonnage placed during the last week fell off somewhat from the previous week. An eastern Massachusetts stove manufacturer took 1000 tons and another Massachusetts foundry, 600 tons. Scattered Maine sales in small individual orders totaled about 400 tons. Two orders reported for Rhode Island called for 400 tons. A Vermont consumer took 500 tons and a central Connecticut consumer, 200 tons. Other scattered lots in Connecticut and Massachusetts brought the total for the week close to 4000 tons. Prices are still soft and the fact that several of the recent sales were made by Pennsylvania furnaces, indicates that prices in that district are now competing with the $18 Buffalo furnace prices. One Massachusetts foundry is reported as having bought 200 tons of No. 2X (2.25 to 2.75 silicon) eastern Pennsylvania at $19 furnace or $23.06 delivered. The Vermont buyer bought eastern Pennsylvania iron at a price reported as bettering an equivalent of $17.75 Buffalo. The delivery paid with a $4.06 freight rate to Pennsylvania, and a $5.46 to Buffalo would mean a price below $19.15 eastern Pennsylvania. The reduction made by various producers of charcoal iron some two weeks ago has resulted in the closing of considerable tonnage in the New England territory. General inquiry for pig iron is encouraging and sales during the next week or ten days are expected to exceed those made so far this month.

Business Holds Up Well

Cleveland, March 14.—The volume of new business coming to the northern Ohio pig iron producers is greatly in excess of that of last month. One of the leading furnace interests' sales thus far are approximately 20,000 tons as compared with 7500 tons in the same time in February. Its shipments are 100 per cent greater than in the same number of days in February. Another makers sales last week amounted to 4000 tons as compared with 7000 tons tons in the preceding week and 9000 tons in the week before that; yet the total for the month to date is ahead of that of February. Its current sales include tonnages for delivery through June. A Cleveland furnace company is out of the market temporarily, while another producer in the Cleveland field is experiencing an unusually good run of business. Its sales in the past week included several 1000-ton lots, several 500-ton lots and a number of lesser importance. These were all placed in Cleveland, while the same interest closed for a number of good tonnages in the outlying territory, including 1000 tons of foundry to a central Ohio consumer, reported at the going prices. The market is still $19.50 to $20 delivered in Cleveland, and $19, furnace, in outlying districts. The latter price is being adhered to in business developing to the West and South, but in the direction of Buffalo some lower prices are being encountered. Rumors of concessions on business placed in Cleveland are heard, but there is nothing definite to establish this, and in general prices are being held. One producr has allowed some of its contract customers who closed for iron some time ago at much higher levels to take three tons of iron at current prices to one at the contract price, and in this way is liquidating much of the business. Current inquiries include one from Juincy, Ill., stove manufacturer who is asking for 625 tons of 1.25 to 1.50 silicon iron; 275 tons of 2 to 2.50 silicon iron, and 100 tons of 4 to 5 silicon iron.

Fair Tonnage Is Sold

Buffalo, March 14.—Selling of pig iron has been going forward fairly briskly during the week. Two furnaces interests sold 3000 to 4000 tons while another sold 4000 tons. Another furnace is thought to have disposed of about 2000 to 3000 tons. Small inquiries are the rule. Out of a total inquiry of 650 tons, one furnace interest recorded individual inquiries as follows: 1000 tons; 600 tons; 400 tons; 300 tons and nearly 30 or 40 more to make up the aggregate. A local consumer was the purchaser of 3000 tons of malleable at $18.50. Most of the furnaces are endeavoring to maintain a price of $18.25 to $18.50 base, though the Lackawanna Steel Co. is understood to be making a price of $18 in some instances. Most of the iron being sold is for second quarter delivery. July 1 now is the advance delivery date on tonnage accepted.

Slight Recession Is Noted

Cincinnati, March 13.—A slight recession is noted in the pig iron buying movement here and there and inquiries have not increased notably. While the southern market still is on a basis of $15 to $15.50, Birmingham, the tendency is toward an advance and the latter price is the minimum with most furnaces, only one at present quoting $15, so far as can be ascertained here. Production conditions and decreasing stocks on furnace yards are having a strengthening influence, particularly in the Alabama district. One of the encouraging developments is the fact that Cincinnati consumers, who have been conspicuous by their absence for several months, are beginning to come into the market and considerable iron has been sold for local delivery during the past week. One seller has booked two 100-ton and one 50-ton lots for immediate Cincinnati delivery from southern furnaces and another 200 tons to one local foundry and 100 tons to another. Dayton, Hamilton and Columbus have each had several buyers in the market, an aggregate of approximately 1000 tons of foundry iron having been booked for prompt delivery to those points. This market is firm at $19 to $19.50, Ironton, O., although it is reported that a large consumer at Springfield, O., has just closed on 300 tons at a fraction below the market. One lot of 500 tons and another of 300 were taken by Tennessee consumers and a melter at Peoria bought 300 tons of southern No. 2 foundry.

Among the larger inquiries current are included one for 1000 tons of malleable for an Illinois melter and two lots of 1000 tons each of foundry for Tennessee users, each for delivery during the second quarter; 500 tons for another southern consumer, and 500 tons for an industrial foundry in

eastern Indiana. The Louisville & Nashville railroad is in the market for 160 tons of foundry and 11 tons of ferromanganese.

Consumption Increasing

St. Louis, March 14.—The number of sales of pig iron, ranging from car load lots up to 300 tons is increasing, and nearly all those buying apparently are in immediate need of the iron. Nearly all the jobbing foundries are in operation, and have booked new business sufficient to keep them busy at their present rate for some weeks. The melt has increased perceptibly since March 1, and total consumption for March is likely to outstrip the combined totals of January and February. The largest inquiry for foundry iron specifies 2000 to 3000 tons wanted by an Indiana brokerage interest, for delivery through the second quarter. The inquiry for 500 to 800 tons of malleable by an Illinois melter still is pending. Demands of local melters aggregate approximately 2600 tons. A leading western steel interest is asking for prices on 3000 to 5000 tons of basic. The National Enameling & Stamping Co. has lighted four additional open-hearth furnaces, making nine now in operation. The American Steel Foundries is working at close to full time. Stove plants continue to work mainly on repairs and are running only a few heats a week. The leading interest, however, proposes to resume operations soon. It has been idle several months. Heavy deliveries are being made by the Sloss-Sheffield Iron & Steel Co. on iron sold recently to be shipped by river and rail. A boat load of 1600 tons was unloaded at Metropolis, Ill., March 7. Prices are steady and firmer. Southern No. 2 foundry (1.75 to 2.25 silicon) is quoted at $15 to $16. Chicago iron holds to $20 base, and the leading local producer is quoting on that basis.

South Using More Iron

Birmingham, Ala., March 14.—The pig iron market in the South is beginning to show improvement, as inquiries are coming in for second quarter needs and some of them are developing into orders. Quotations are gaining strength, and $15.50 now is practically the minimum for No. 2 foundry (1.75 to 2.25 silicon) while some of the companies are making sales at $16. As an example of prompt transportation methods now in vogue, a carload of iron was shipped a few days ago from the Woodward Iron Co.'s plant and delivered in Tennessee, nearly 200 miles away, in less than 36 hours. The Woodward company will blow in its third blast furnace at Woodward this week and will get one of the Vanderbilt furnaces ready to resume operations soon. All furnace companies in the Birmingham district are now selling pig iron and it will be necessary to increase production when the the surplus iron on yards is shipped.

Local consumption is increasing. The Birmingham Machine & Foundry Co. is receiving more business now than for more than 16 months. Shipments of sugar machinery have been made recently to Peru, Mexico, Cuba and Louisiana. Other large industries announce more business in hand and in sight.

Coke Prices Shade Easier

Increased Production Makes More Furnace Fuel Available at $3.25—Less Concern Is Felt Over Coming Coal Strike

COKE PRICES, PAGE 718

Pittsburgh, March 14.—While beehive coke production by merchant ovens still is greatly curtailed, it has been increasing and hence spot prices are not so firm as they were a week or two ago. At present while a number of interests are maintaining $3.40, $3.50 or even higher quotations on spot supplies of 48-hour fuel, more of it is available at $3.25 than could be found two weeks ago. Although tentative inquiry for 15,000 tons monthly, for a blast furnace requirement over a certain period, has not developed as yet, the Lackawanna Steel Co. is understood to have closed upon Connellsville beehive coke for a period at a price below $3.50. The Shenango Furnace Co. has renewed its contract for by-product coke for April, May and June. From $3.25 to $3.50 is considered fairly representative of the beehive furnace coke market although a sale of one carload of a certain kind of furnace coke was noted this week at $4.25 to the consumer. The Eastern Steel Co. entered the market for 25 or 30 carloads and other eastern anthracite coal consumers are talking of utilizing furnace heating or foundry coke as a substitute in the event of a long coal strike. One interest's representative was in the city last week endeavoring to place 20 carloads. Demand for standard selected foundry coke still continues at a fair rate although it is not so heavy as two weeks ago. The impression is growing that if a coal strike is called on April 1 it will be easy to secure coke shipments on April 2 and subsequently so that not much concern is expressed over fuel supplies from $4 to $4.75 is the market although $4 to $4.50 represents the more general quotation with $4.75 sometimes applying to foundry fuel in box cars. Production according to the *Connellsville Courier* for the week ended March 4 was 112,710 tons as compared with 105,730 tons the preceding week.

Sales Large; Market Firmer

New York, March 14.—Trading in coke was of considerable proportions in this district during the past week, although the total business booked was not as large as that of recent weeks. Sales of the past week in this district aggregated at least 12,000 tons. Most of the coke is for March shipment, but considerable is for delivery up to the end of April. The market is $4.50 to $4.75, Connellsville, for standard beehive foundry coke. The lower price is being done only occasionally and the market is closer to $4.75. Special brands of foundry coke are bringing $5.50, Connellsville. The northern New Jersey by-product coke producer booked considerable business during the past week at its usual price of $8.50, delivered to most points on the Pennsylvania, Erie and Lackawanna railroads, and $9.15 delivered to points on the Central railroad of New Jersey, for by-product foundry coke. Considerable medium sulphur furnace coke has been bought during the past week for miscellaneous purposes at $3.35, Connellsville.

Contracts for Last Half

Cincinnati, March 14.—The coke market here is less active. The Belfont Iron Works Co., which arranged to fire its blast furnace about April 1, has been in the market for a round tonnage and is said to have closed with the Ashland Iron & Mining Co. for its requirements covering 60 days. An outstanding purchase recorded here this week is that of 1500 tons of foundry fuel for delivery in the Chicago district over the last half of the year. Another important transaction in foundry coke closed here with an eastern consumer involved 1800 tons monthly for a period of 10 months. The usual daily average of carload lots is being negotiated.

Coke Shipments Heavy

Boston, March 14.—Foundries are beginning to be concerned about their coke supplies and are requesting early shipment. For the first time in many months foundries are experiencing delay in having their shipping instructions filled. A large number of foundries are ordering a two to three-months supply for delivery during the present month. The price is still $10.15, delivered.

Market Shows Strength

St. Louis, March 14.—Increased meltings in this district are reflected in a better demand for foundry coke. The market for that fuel has shown considerable strength since March 1 with buying in larger volume. Producers and selling agencies report excellent shipping specifications. There has been a heavy movement to smelters in the tri-state district during the past two weeks. By-product producers report satisfactory reductions in their reserve stocks. Connellsville 72-hour foundry coke is quoted at $4.25 to $4.75; the furnace product about $1 lower. The market for steaming coal is slightly more active, due almost entirely to the disposition to store.

More Demand in South

Birmingham, Ala., March 14.—Foundries, machine shops, and pipe plants are resuming or increasing operations and this is creating more demand for coke though the Birmingham market is not normal. Much coke is being produced. One of the largest by-product plants of the district has a large amount of coke piled up, but at practically every other battery of ovens, beehive as well as by-product, shipments are being made about as quickly as the coke can be loaded. Prices show no change.

Some Bar Contracting

Consumers Place Orders for Three Months Ahead—Volume of Business Causes Mills To Increase Operations—Jobber Buying Is Reported

BAR PRICES, PAGE 718

Chicago, March 14.—That buying of steel bars is at a much better rate than formerly is indicated by the fact all bar mills at the Gary plant of the Illinois Steel Co. are engaged at full capacity this week, a condition which has not obtained in a year previously. While independent producers have announced a minimum of 1.50c, Pittsburgh, and 1.60c, Chicago, on soft steel bars, sufficient protections have been out to prevent definite observation of the market as to the establishment of the higher minimum. It is understood quotations at lower figures which had not been acted on by March 13 were withdrawn, leaving the market at the new level. Bar users who have been able for some months to order material from week to week are finding this impossible and now are forced to buy ahead two or three weeks in order to obtain a continuous supply. This results from better backlog and is tending to cause larger bookings. Demand for bars is more general and all lines of trade are taking larger lots, but it is most noticeable in the case of railroads. Automobile manufacturers are operating 75 to 80 per cent of capacity. Most tonnage is coming from miscellaneous small manufacturers, whose business apparently has increased considerably. Warehouses have been heavy buyers of bars and other finished steel at the recent bottom of the market.

Bar iron is finding somewhat better inquiry than formerly, in small lots. One independent maker today advanced bar iron to 1.60c Chicago.

Considerable Business Placed

Philadelphia, March 14.—Considerable steel bar business was placed in this district the last week at outstanding prices which now, however, in most cases have been withdrawn. All independent mills now are quoting 1.50c base Pittsburgh. The Steel corporation has not announced any price change from 1.40c. Very little business now is coming out. It is learned that in some cases, combination tonnages of bars, plates and shapes were booked under 1.30c in recent drive by some mills.

Demand Is More Active

Buffalo, March 14.—Activity is a feature of the local steel bar market with an unusually strong demand coming from the drop forge industry. A keen demand for ½-inch and 1¼-inch rounds is shown. Mills are showing better operation. The Lackawanna Steel Co. now is quoting 1.50c on bars.

Little Business at New Level

Pittsburgh, March 14.—While but little business has been done in connection with merchant steel bars on the basis of the recently increased price, namely 1.50c, base Pittsburgh, that now is the going quotation on new business. Bookings since the advance a week ago have been heavy upon protected quotations which generally have been around 1.40c, base Pittsburgh. Several round tonnages are noted and a large number from a carload up to 500 tons at a time come out. Considerable business has been placed among different makers because of their apparent determination to establish a price more in harmony with production costs. Consumers and others evidently believe the turn has arrived and while it may have been possible not long ago to place tonnage business at 1.30c, 1.27½c and even at 1.25c, such low figures no longer are available. The market is quotable for the time being on the basis of 1.40c to 1.50c, base Pittsburgh.

Maintain Old Price Level

Youngstown, O., March 14.—Makers of bars here have not changed prices to conform to those recently announced by other independent companies. The leading maker in the valley while not actively seeking business will continue its present price policy until some announcement is forthcoming from officials of the corporation. Another maker, which has not been active in the bar market for several months, has no set policy regarding the price of bars but will take on business at various prices depending upon the tonnage involved. Fairly good backlogs have been accumulated and next week is expected to show expanding rolling schedules.

Some Contracts Are Closed

Cleveland, March, 14.—Outstanding developments in the bar market in this territory apart from the increasing tonnage has been the contracting by some consumers for three months ahead and the growing buying by jobbers for stock. The contracting has been done principally by manufacturing consumers and has been on the basis of 1.40c Pittsburgh. Fair tonnages have been involved. Some of the lots closed by jobbers have called for several thousand tons. In addition to the contract and jobber sales, a growing number of miscellaneous transactions running up to 1000 tons each is being closed. Nut and bolt manufacturers are specifying more freely. Some buying of hoops and bands also is being done. While 1.40c Pittsburgh, or 1.61c Cleveland has become the general bar market some business at 1.35c Pittsburgh still was being put through the past week. This was exceptional, however, and involved especially attractive tonnages on lots on which old quotations had been outstanding. The 1.50c price as yet is not much of a market factor.

Cold-Drawn Concessions Noted

Pittsburgh, March 14.—For the past week or 10 days concessions under 1.90c, base Pittsburgh, have appeared on cold-drawn steel bars but these are not numerous on small orders and usually apply where tonnage is involved. The full spread of the market is 1.80c to 1.90c, base Pittsburgh. With increased prices prevailing on merchant steel bars, however, makers are disinclined to name the minimum figures and possibly within a week or 10 days 1.90c to 2.00c again will prevail. At the moment, however, eagerness on the part of some producers to accumulate business is noted and low prices are being quoted on 100 tons or more. Small orders are numerous but some attractive business is coming from the automobile companies. Business from this direction, however, is less heavy in proportion to the total tonnage placed than in some time past since other consumers are coming to the front wih specifications. Producers of cold-drawn material are beginning to feel that the time has arrived where they will be justified in seeking a small profit on sales. Orders at present are considered large as compared with those filed 60 or 90 days ago.

Bolt, Nut and Rivet Prices Are Shaded

NUT AND BOLT PRICES, PAGE 778

Philadelphia, March 14.—Second quarter contracts for bolts and nuts are being booked on a basis of 70 and 10 off for large bolts, but with the understanding that customers will receive the benefit of the market price if it goes lower than at present. In some instances business was placed at 70, 10 and 5 off. Considerable shading is reported on desirable rivet business. In some instances structural rivets sold at 1.90c base Pittsburgh. This is exceptional, however, and on most business 2.20c for structural and 2.30c to 2.35c for boiler was named. Makers in this district report demand in the past few days has been the best in many months.

Bolt Specifications Better

Chicago, March 14.—While the price situation on bolts and nuts continues unsatisfactory, some signs of betterment are noted and the extreme quotations formerly met with, are not so often seen. Consumers are sending in better specifications on orders and the situation is less difficult than formerly.

Improvement Continues

Cleveland, March 14.—The slight improvement in demand for bolts and nuts, reported during the past few weeks, has been sustained and makers are confident the upward swing will continue. Orders are larger and more numerous. While exceptionally large tonnages are not being specified, more carload business is being placed. Automobile and railroad interests are the largest consumers at present, while other lines, including implement manufacturers, are ordering in small quantities. Jobbers are buying only in small lots. Prices generally are firm although some shading is in evidence. The strengthening of steel prices as yet has not effected bolt and nut quo-

tations although it may later on.

Rivet demand continues to improve. Orders are being received from many sources, and while these are not large, more carload business is in evidence. Orders also are more numerous. Rivet quotations generally are being maintained, but shading of $1 a ton under the quoted levels is being done on attractive business.

More Wire

Being Bought as Farm Demand Makes Itself Felt

WIRE PRICES, PAGE 718

Pittsburgh, March 14.—More buying of wire products is noted and apparently distributors, fence makers and others are finding their stride. Nail orders are particularly plentiful, pointing to a considerable building expansion. One interest reports average bookings of several mixed carloads of nails daily and apparently the 2.40c base Pittsburgh price is firmly established for the time being, 2.25c, base Pittsburgh, being the prevailing quotation on plain wire. Other grades, galvanized wire; barbed wire; painted and galvanized were reduced $2 per ton when the nail price situation was clarified on Feb. 22 at 2.40c but plain wire remains unchanged at 2.25c, base Pittsburgh. Reports of lower prices than 2.40c on nails are being circulated but efforts to trace them to actual transactions are not successful.

Demand Better From Farms

Chicago, March 14.—Increasing demand for wire and nails from western agricultural states indicates the beginning of good business from that section. The tone of the market is firm and prices are steady at 2.25c, Pittsburgh, for wire and 2.40c, Pittsburgh, for nails, shading not being encountered. Many requests are being received for prompt shipment and mills are able to meet these easily as stocks are in better condition than for many years. Poultry netting is in heavy demand and barbed wire is showing signs of increased demand.

Some Buying Ahead Done

Cleveland, March 14.—Demand for wire products has grown encouragingly and important producers report recent business has been the best in a number of months. Mills in this district are operating at about 65 per cent. Jobbers are not doing much but there is an increasing requirement from the manufacturing trade. This has brought about the appearance of some contracting and one buyer in this district has recently closed on 1000 tons of wire for shipment up to July. A local buyer who sought to shade the market on 500 to 1000 tons of wire has been unsuccessful. A similar situation applied to a local order of 3000 kegs of nails which was divided among three mills at full prices. Nails are firmly held at 2.40c and plain wire at 2.25c Pittsburgh, equivalent under the prevailing differential to 2.50c and 2.35c Cleveland, respectively.

Close for Plate Tonnages

Consumers on Old Quotations Take Material Under 1.40c—More Mills Increase Price—More Tonnage Comes Out

PLATE PRICES, PAGE 718

Philadelphia, March 14.—All eastern plate makers have advanced prices to 1.50c, base Pittsburgh, following the action of the Jones & Laughlin Steel Co., last week. Little business has been booked at this price in the past week, business generally being taken at lower prices and applied on tonnages on which lower quotations had been outstanding. There is considerable interest as to how the market will develop in the next week or two, in view of the fact that the Steel Corp., has not announced a decision to follow the independent makers. The market now is nominal, at 1.40c to 1.50c, base Pittsburgh. Some of the past week's business went under 1.40c on old quotations. Great interest is shown in the Norfolk & Western railroad's inquiry for 2000 to 4000 cars on which bids will be opened March 17. Not only car builders but some eastern shipyards are bidding on the cars. Plate requirements are 11 tons per car, or a total of 22,000 to 44,000 tons. The Baldwin Locomotive works is inquiring for 2000 tons of plates for 50 locomotives for the St. Paul. The Baldwin works placed 1900 plates for 47 Burlington locomotives with an eastern mill. Some eastern shops are bidding on a pipe line for Seattle, involving 12,500 tons of plates. The Merchant Shipbuilding Co. has not yet taken action on its inquiries for 1000 and 2500 tons of plates for riveted pipe lines. The Cramp shipyard is bidding on a lake vessel involving 1500 tons of plates. The Bethlehem Bridge Co., which is low bidder on the New York Central Castleton, N. J., bridge is inquiring for 1800 tons of wide plates for this job. Eastern plate mills are operating at 30 per cent or less.

Plate Orders More Numerous

Pittsburgh, March 14.—Fabricators are keen for the few tank inquiries current, and two or three groups of two tanks each in Louisiana and other southern states developed some low figures recently. The Sinclair Oil Co. is said to be negotiating for more tanks. Tanks recently ordered by the South Penn Oil Co. are now being fabricated. Plate orders have been more numerous, particularly since the effort to raise the price to 1.50c, base Pittsburgh. This level, while general as a quotation, has not applied on much business in hand as yet, since so many producers had old quotations out which they had to protect. Some of these orders probably will continue to drift in for the remainder of the month. While on new inquiries 1.50c, base Pittsburgh, generally is being quoted, 1.40c to 1.50c represents the going market today. The Dravo Construction Co. which has built a few of the 10 barges recently ordered by the Island Creek Coal Co. continues to order plates as needed and steel car companies likewise enter the market with fair sized tonnages. The Pressed Steel Car Co. received an order recently for 40 cars from the Pittsburgh Railways Co. and 500 tons of of steel, mostly plates, will be needed.

Some Sales at 1.50c

Cleveland, March 14.—Little if anything of a price below 1.40c Pittsburgh on plates is heard this week and for some fair sized lots 1.50c Pittsburgh has been paid. One of these was for about 300 tons for immediate delivery. The general market however still can be regarded at 1.40c as the Steel corporation mills continue to name that figure. The gradual expansion of tonnage in the market is being maintained. The Standard Oil interests have out a new inquiry for 55 low-pressure stills requiring about 1200 tons of plates. This is in addition to about an equal number of high-pressure stills recently in the market, which as reported last week will be fabricated by the company itself. An inquiry is out for about 2000 tons, for 50 locomotives upon which the St. Paul railroad now is taking bids. Nothing has developed with regard to negotiations for new vessels with lake yards. It is understood that bids on the passenger craft now pending will be taken this week.

Demand Is Not Heavy

Chicago, March 14.—Without further car orders and with tank building somewhat in abeyance, demand for steel plates is not as brisk as for some other forms of finished steel. However, mills producing this material have a considerable tonnage on books and while 1.60c, Chicago, is announced as the minimum quotation on plates, shapes and bars, it is predicted by plate producers that the next upward change in the market will be an advance in plates.

Buy Hoops for Needs

HOOP PRICES, PAGE 718

Pittsburgh, March 14.—Specifications for hot-rolled strip steel and for merchant steel bars usually are accompanied by some for hoops and bands in harmony with consumers' needs. Considerable business is being offered by buyers who are looking for bargains. Occasionally some exclusive hoop or band business is placed. Orders for up to 50 or 100 tons, of hoops and bands are fairly numerous with an occasional specification involving, and there is a steady trend toward improvement in the market. Hoops are quoted at 1.80c to 2.00c, base Pittsburgh, that representing the full spread of the market although most orders are understood to be filled at 1.80c or 1.90c. Some makers are naming the same base price on cut hoops as on coiled. Bands are unchanged at 1.70c to 2.00c, base Pittsburgh.

Steelmakers Buy Scrap

Mills Taking Heavy Melting Steel in Large Tonnages and Prices Advance Sharply—Other Grades Also in Demand and Stronger

SCRAP PRICES, PAGE 782

Chicago, March 14.—Except for rolling mill grades, buying of scrap is fairly active and the market is 25 to 50 cents higher than the average for last week. Consumers of steel scrap are buying generally and in small lots at frequent intervals. Foundry and malleable grades are moving fairly well, although consumers are reluctant to take material at the higher prices now prevailing. Quotations now are $1 to $1.50 higher than the low level which formerly prevailed. Railroad scrap is scarce, possibly due to need of cars for coal transportation. A freer movement is expected after April 1 when coal will not move so freely. The Wabash railroad offers 500 tons and the Southern 1000 tons.

Market Continues Active

Boston, March 14.—Sales of scrap during the past week have been relatively heavy in the eastern Massachusetts district. One dealer reports having shipped to Pennsylvania something in excess of 500 tons, mostly heavy melting steel. Borings have also moved freely, and especially for chemical use are in strong demand. Prices as high as $10 have been paid for this grade by the dealers. Mixed borings and turnings have jumped from $4.50 to $5.50 during the last few days and several attractive orders have been placed. Nearly all steel mill grades have advanced, the average increase being 50 cents. Cast grades of scrap continue dull, with only a few scattered car lots reported for the week. One sale of car wheels is reported at $14.50 delivered consumers. No. 1 cast still is held at $17.50.

Advances at New York

New York, March 14.—Further advances in heavy melting steel are noted in the local scrap market, dealers now offering $9 to $9.50, f.o.b. New York. This is attributable largely to additional buying by the Cambria Steel Co., Johnstown, Pa. An advance has also been made in mixed borings and turnings, the market on this grade now holding at $6 to $6.50, f.o.b. New York. Steadiness characterizes the market on all other grades. Aside from trading in heavy melting steel, little business is developing.

Buying Advances Quotations

Philadelphia, March 14.—Heavy absorption of steel scrap by Pittsburgh and Johnstown, Pa., mills has brought higher prices in the East and the Bethlehem Steel Co., which needs scrap has been forced to pay $13.50 delivered Bethlehem. Other eastern mills are not offering higher than $12 and $12.50 delivered, but they are not getting any tonnage at these prices as dealers prefer shipping their scrap west at higher prices. During the past week heavy tonnages were sold for movement to Pittsburgh and Johnstown at prices equivalent to $13.50 to $14 delivered, eastern Pennsylvania, and a Pittsburgh mill has placed more business at $16 delivered Pittsburgh, equivalent to $14.25 to $14.75 delivered, eastern Pennsylvania. Iron mill scrap is moving somewhat better and wrought pipe is quoted higher. Dealers are optimistic and willing to pay high prices for scrap for speculation as they expect considerably higher quotations.

Dealer Activity Upholds Market

Pittsburgh, March 14.—Activity among dealers continues to be noted in the scrap market. Many having to cover shorts are scouting around trying to locate proper tonnages at satisfactory figures. They are having to meet increased levels, however, so that the $15 to $15.50 price on heavy melting steel, with other grades priced in harmony, is well sustained because of the strength recently given to the scrap market here both by demands nearby and at a distance. For instance, offers of turnings as well as other grades are higher in Youngstown, O. and in Johnstown, Pa., than some users are willing to pay here, and as a result considerable scrap is kept from reaching the Pittsburgh area. This has created a virtual shortage. Since there is an absence of pressing need among several consumers, new buying is limited since these particular users are not inclined to increase their offers for the time being and are temporarily out of the market.

Heavy Melting in Demand

Buffalo, March 14.—The market for heavy melting steel is strong with some dealers attempting to buy tonnage for use in an unfilled tonnage order to a local mill. They are offering $14 now for heavy melting steel. The local market is interested in a quotation of $16 for the same kind of material, made by a Youngstown dealer and requiring delivery there. No sales have been made on either offer, and there seems to be a disposition to wait and see whether the market is due for any sharp jumps. Under an adjustment, a local steel maker finally has agreed to take 10,000 tons of heavy melting steel and hydraulic compressed sheets at an agreed price of $21. The scrap was ordered more than two years ago but delivery was held up.

Sharp competition among dealers is expected to feature the offering of two lots, one at Syracuse and one at Buffalo, by a freight car dismantler. Each list includes 1500 tons of heavy melting steel and the aggregate of No. 1 cast is 400 tons. A tonnage of car wheels is also included. Demand for cast scrap continues and quite a tonnage of borings and turnings is required in outside districts.

Local Consumers Interested

Cincinnati, March 14.—Consumers here recently have shown some interest in the scrap market for the first time in several months and while they have not yet come into the market either with orders or definite inquiries several feelers have been put out which dealers consider a favorable indication. The recent buying activity from outside points is holding up well but the volume of business is not increasing at a rapid rate. Some railroad tonnage has been taken on recently by local dealers. The market is firm but prices have not been advanced.

Prices Advance Sharply

St. Louis, March 13.—Sentiment in the scrap market has become extremely bullish, and prices during the week have soared, advances on some items amounting to as much as $3 a ton. The strength is partly in sympathy to the upturn at Youngstown and other points in the East, but the entrance into the market of the American Steel Foundries Co. for a large tonnage was the immediate cause of the rise. Other important consumers either were buying or inquiring. A leading car builder is reported to have booked business sufficient to keep its plants in operation for the next six months. Particular strength was manifested in cast grades and steel. Cast is scarce and urgently wanted at the moment, with the result that prices are from $1 to $3 higher. Rolling mill grades remain quiet but are higher in sympathy. Considerable material is being moved out of local yards. Railroad offerings included the Mobile & Ohio, 800 tons; Kansas City Southern, 600 tons; St. Louis & San Francisco, 1200 tons and United railways of St. Louis, 1500 tons of girder rails.

Improvement Is Noted

Birmingham, Ala., March 13.—Improvement in the scrap market in this district has developed although it cannot be said there has been a marked increase in transactions. Foundry and machine shop demands are beginning to show strength while heavy melting steel is being consumed in larger quantity than for several months. Other products on the scrap list show a little better demand. Quotations are not taking on any strength and consumers still are masters of the situation and fixing the prices at which they are willing to buy. Stocks on hand are ample for all demands for material. High pressure and soil pipe producers are among the heavier consumers of scrap.

Nearly All Grades Up

Cleveland, March 14.—Demand coming almost entirely from outside the district, combined with much activity among dealers seeking to cover shorts, has given the market greater strength during the past week. No Cleveland consumers are taking tonnage beyond contract specifications. Prices on practically all grades have been advanced on an average of 50 cents a ton, heavy

melting steel being up to $12.85 to $13.25 and machine shop turnings to $9 to $9.15.

Some Reductions Made in Warehouse Prices

WAREHOUSE PRICES, PAGE 779

Philadelphia, March 14.—Demand for iron and steel materials out of warehouse is improved in this district the volume of orders being larger than at any time previous in more than a year. As a result, jobbers are optimistic and prices with a few exceptions are holding at the quoted levels. Hoops, bands and cold-rolled steel are being quoted lower. Hoops are now quoted 3.15c, bands, 3.00c and cold-rolled rounds, 3.00c.

To Revise Prices

New York, March 14.—A reduction in shapes, plates and bars will be announced tomorrow by a leading jobber. It is understood the revision will amount to $3 a ton in each case. This action is being taken, it is said, in order to bring warehouse quotations on these descriptions more in line with mill prices. Demand is improving slightly.

Prices Are Maintained

Cleveland, March 14.—Jobbers in iron and steel materials in this district report there is a slight improvement in demand. However, the tonnages are small and individual orders are limited. While jobbers have information to the effect prices in some other districts have been lowered quotations here are being maintained.

Store Prices Marked Down

Chicago, March 14.—Steel warehouses have adjusted prices on plates, shapes and bars by a reduction of $5 per ton, taking up the slack which remained from various reductions in mill quotations. Other lines of steel remain unchanged. Warehouses have bought heavily of steel during the past few days, evidently believing mill prices were at the bottom and now are stocked for future demand.

Strip Orders Encouraging

STRIP PRICES, PAGE 718

Pittsburgh, March 14.—Orders placed and pending for both hot and cold-rolled strip steel are sufficiently numerous and involve a sufficiently large tonnage to encourage producers. Consumers are taking more interest in the market and while individual orders as yet are not large the total booking are fair. What business is placed is coming from several consuming lines led by the automotive industry. Automobile manufacturers who are busy have been ordering in lots of 200, 500 or 600 tons at a time of both hot and cold-rolled strip. The hot-rolled grade still is quoted 1.80c to 2.00c, while cold-rolled is quoted at 3.50c, base Pittsburgh. Most strip mills are operating on a better basis than three weeks ago and all are on a much better basis than a year ago.

Sheet Sales Still Growing

Makers Surprised by Large Tonnages Coming In—Believe Real Buying Movement Under Way—Demand for Full-finished Stock Quiet

SHEET PRICES, PAGE 718

Pittsburgh, March 14.—What appears to be a real buying movement in sheets continues and orders for practically all grades are fairly heavy. Bookings of full-finished automobile sheets, however, have been conspicuous by their absence. Round tonnages of black, galvanized and electrical sheets and some sizable lots of blue annealed sheets, both for domestic use and export, are noted, as are smaller tonnages of specialties, including stove, drum and elbow stock, imitation stone surface, metal lath, and other building construction sheets. The aggregate tonnage of new business for the past week is said to be surprisingly large, both for the American Sheet & Tin Plate Co. and for several independent producers. Sheet mill operations are increasing steadily and for the leading interest an increase of 5 to 10 per cent is noted in the past week or 10 days. Orders are coming from widespread territories and practically all are for shipment as soon as possible. Few, if any, contracts for future deliveries are being booked although several customers have protected themselves as far as the end of the second quarter. Among foreign buyers, Japan continues to be the chief purchaser of American sheets and is taking sizable lots of thin gage sheets for building purposes. Prices are firm, and 2.25c, 3.00c, 4.00c and 4.35c, base Pittsburgh, are the ruling figures on blue annealed, black, galvanized and full-finished automobile body sheets, respectively.

Eastern Business Better

Philadelphia, March 14.—Sheet demand is better. Two lots were placed in the past week involving over 500 tons each. Eastern mills are operating at 50 to 60 per cent. Prices are firm at 2.25c, base Pittsburgh, for blue annealed, 3.00c for black and 4.00c for galvanized, although specifications continue to be accepted on old contracts at 2.75c for black and 3.75c for galvanized.

Export Demand Helps Trade

Chicago, March 14.—Demand for steel sheets for export to Japan is assisting western mills in keeping busy, but the percentage of domestic business is constantly increasing. Demand is excellent and mills are operating at capacity with prices firm.

Size of Orders Increasing

Youngstown, O., March 14.—Improvement in the sheet market is noted this week both from the standpoint of inquiry and the volume of business. Orders are coming from various sections of the country. Where orders six to eight weeks ago entailed from 25 to 75 tons they now have expanded to 100 to 200 tons. Stove and furniture makers particularly are active in increasing their requirements. Prices are firm at 2.25c, Pittsburgh for blue annealed, 3.00c for black and 4.00c for galvanized, although there is a general feeling that they may go to higher levels. The volume of going business has not reached the stage where accumulations have built up a backlog. Sheet mill operations this week again returned to 53 per cent of capacity after a week's recession to 47 per cent.

Tin Plate Demand

Displays Strength as Orders Continue To Be Placed—Talk Higher Prices

TIN PLATE PRICES, PAGE 718

Pittsburgh, March 14.—Instead of anticipating a lull, tin plate producers here expect increased specifications in the next two or three months. This is based on the premise that for vegetable and fruit packs beginning in May and June, not enough plate is in can makers' hands notwithstanding heavy buying of recent months. Mill specifications on tin plate for shipment in May are due March 15 and for the large June pea pack which gets under way in that month, considerable tin plate yet is to be purchased. In June, too, commences the California fruit pack which is expected to be exceedingly heavy this year. Several tin plate producers are maintaining practically 100 per cent operations and the American Sheet & Tin Plate Co. likewise is increasing operating schedules. Average operations of tin plate mills now is in excess of 70 per cent. While deviation from the market price on production plate of $4.75 per base box of 100 pounds, Pittsburgh, is noted, this is not more than always has been the case, no matter what the base price, some plants finding it impossible to book business unless they grant concessions.

Expect Prices to Climb

Youngstown, O., March 13.—Strength in the tin plate market continues to be displayed and there is a belief prices will mount higher early in the second quarter. The minimum in this territory now is $4.60 base box Pittsburgh, although some business has been taken at a higher level. Mills have several weeks rolling ahead and with makers of sanitary equipment coming into the market next month an additional accumulation of orders is contemplated. The leading maker this week is operating its full complement of 31 hot mills. At the Shenango works of the American Sheet & Tin Plate Co., New Castle, Pa., 30 hot mills are rolling while at the New Castle works 12 hot mills are engaged. At the Farrell works of the same company 20 of the 30 hot tin mills are scheduled.

More Shape Tonnages Up

Additional Inquiries Total 27,000 Tons with 11,850 Required for Great Northern Ore Dock—Other Work Active—Price Minimum 1.40c

STRUCTURAL SHAPE PRICES, PAGE 718

New York, March 14—New structural inquiry involves more than 8000 tons, the largest single item being more than 4000 tons for a shed for municipal pier 84, Philadelphia. Another sizable inquiry calls for 1600 tons for a building for Columbia university. Orders aggregate approximately 6000 tons, the largest calling for 1000 tons for an office building in Boston. While several of the independents have advanced their offerings on shapes to 1.50c, Pittsburgh, the leading seller continues to quote 1.40c.

The 23,000-ton bridge of the New York Central railroad still is pending.

Awards Show Increase

Boston, March 14.—The advance in steel prices, together with the approach of spring, have combined to bring many contemplated jobs to the contract stage and the total tonnage awarded during the past week in the Boston vicinity has been heavy. Contracts include several jobs. The tonnages of which range from 200 to 1000. Other work which is expected to close in the near future shows a large aggregate and the situation is regarded as decidedly favorable. Prices are firmer than a week ago.

200-Ton Sale At 1.50c

Pittsburgh, March 14.—Indicative of the strength of the structural shape market at the recently established price of 1.50c, base Pittsburgh, one lot of 200 tons was offered producers here by a Youngstown, O. buyer this past week and nothing below that figure was developed. However, sizable tonnage still is being booked on standing quotations so that 1.40c to 1.50c represents the full market's spread at the present time. It is reported that the McClintic-Marshall Co. and the Bethlehem Steel Co. may share the 23,000 tons involved in the New York Central bridge over the Hudson river at Castleton, N. Y.

Mill Bookings Heavy

Philadelphia, March 14.—A heavy shape tonnage was booked here in the past week at prices ranging from 1.30c to 1.40c base Pittsburgh. These prices now have been withdrawn in most cases and all eastern mills have announced their minimum on all new business is 1.50c base Pittsburgh for carloads and larger and 1.60c for less than carloads. Little tonnage so far has been booked at the new price; in fact, business appears fairly well cleaned up for the present.

Good Prospects in Market

Chicago, March 14.—While tonnages of structural material recently booked are of moderate size, some excellent lots are in prospect for early closing and Chicago promises to give fabricators fairly good business in spite of the slow beginning of the building season, due to difficulties in the labor field. The largest project to appear recently is a 350-pocket ore dock for the Great Northern railroad at Allouez Bay, Superior, Wis., calling for 11,850 tons of steel, 11,400 tons for the dock proper and 1450 tons for spouts. Both the Miller building and the Belden hotel, involving 5000 and 4500 tons respectively, have practically been awarded to general contractors.

Building Tonnage Placed

Cleveland, March 14.—Award of the contract for 600 tons of steel for the new S. S. Kresge Co. building for this city and of the general contract for the Detroit Medical building, involving 1300 tons, are features of the structural market in this district. Other sizable contracts still are pending and about the only work appearing in the past week is for several small school projects the market being held back by a continuance of the building trades strike. The structural shapes market here is based on the 1.40c Pittsburgh minimum being maintained by the leading producer though some mills are naming 1.50c.

CONTRACTS AWARDED

Power and boiler houses for municipal sewage disposal plant at Milwaukee, 526 tons to the Milwaukee Bridge Co.

Foundry for the Bucyrus Co., South Milwaukee, and new machine and erecting shop at Evansville, Ind., branch plant, 250 tons each, total 500 tons to the Worden-Allen Co.

High school, Monessen, Pa., 300 tons to an independent fabricator.

Building for the American Car & Foundry Co., Huntington, W. Va., 1100 tons to the American Bridge Co.

Building, Armstrong Cork & Insulation Co., Pittsburgh, 315 tons, to the American Bridge Co.

Building, Commercial Savings Bank & Trust Co., Toledo, 300 tons to the American Bridge Co., Pittsburgh.

Flagg building, 43 Winter street, Boston, 150 tons, to an independent fabricator.

Beacon Trust Co., Milk street, Boston, 600 tons to New England Structural Co.

Harvey building, Boston, 350 tons to New England Structural Co.

Allston theater, 189 tons, to New England Structural Co.

South Boston, substation, 206 tons, to McClintic-Marshall Co.

New Bedford theater, 250 tons, to McClintic-Marshall.

Fall River gas plant, 100 tons, to the New England Structural Co.

Northern Pacific railroad bridges, various locations, 2700 tons, to the American Bridge Co.

Junior high school, Whiting, Ind., 107 tons, to Duffin Iron Works.

Hotel Rowe, Grand Rapids, Mich., 344 tons, 97 tons to the Vierling Steel Works and 247 tons to the Rochester Bridge Co.

Gymnasium for University of Montana, Missoula, 182 tons, to Minneapolis Steel & Machinery Co.

Vienna Model Bakery, Chicago, 166 tons, to Butler Street Foundry.

Freight shed for Union Pacific railroad, Los Angeles, 180 tons, to Llewellyn Iron Works.

Boiler house for Los Angeles Gas & Electric Corp., Los Angeles, 750 tons, to local fabricator.

Bank addition, Jersey City, N. J., 275 tons, to the Oltmer Iron Works.

Office building, Boston, 1000 tons, to the New Englnd Structural Co.

Boiler house, New Bedford, Mass., 375 tons, to the McClintic-Marshall Co.

Residence for Mrs. Alexander Hamilton Rice, New York, 400 tons, sublet to American Bridge Co.

Apartment, West End avenue, 400 tons, sublet to American Bridge Co.

Crusher plant at Goldfield, Nev., for Metal Exploration Co., 450 tons, to the Minneapolis Steel & Machinery Co.

Sts. Peter and Paul church, Seattle, 400 tons, to the Dyer Bros. Structural Co.

Ice plant, Riverbank, Wash., 200 tons, to the Dyer Bros. Structural Co.

Apartment house, Post and Taylor streets, Seattle, 100 tons, to the Central Iron Works.

Ore dock, 350 pockets, for Great Northern railroad at Allouez Bay, Superior, Wis., 11,850 tons, bids asked.

Store building, S. S. Kresge Co., Cleveland, 600 tons, to the Massillon Bridge & Structural Co.

Sugar shed, American Sugar Refining Co., Baltimore, tonnage not given, to McClintic-Marshall Co.

CONTRACTS PENDING

Detroit Medical building, 1270 tons, general contract to Bass Construction Co., Cleveland.

Miller building, Chicago, 5000 tons, general contract let to Thompson-Starret Co.

Belden hotel, Chicago, 4500 tons, general contract to be let this week.

Shed for municipal pier, No. 84, Philadelphia, at least 4000 tons, bids to be opened March 24.

Y. M. C. A., Middletown, O., 250 tons, pending.

Hospital, Poughkeepsie, N. Y., 250 tons, bids being asked.

Library and boiler house, Columbia university, New York, 1600 tons, pending.

Building, National Bank of Commerce, Norfolk, Va., 500 tons, E. W. Minter & Co. low bidder.

Department store building for Miller & Rose, Richmond, Va., 1800 tons, postponed to April 1.

Professional building, Charlotte, N. C., tonnage not given, award pending.

Building for the Sun Co., Philadelphia, being redesigned.

Still Consider Concrete Bar Allocation

REINFORCING BAR PRICES, PAGE 718

Chicago, March 14.—Although the city of Milwaukee has had under consideration for some time bids on 5000 tons of reinforcing bars for its sewage disposal station at Jones Island, it has not yet been able to decide whether open-hearth or rail carbon bars should be used and this tonnage still is pending. A few lots have been placed recently of small tonnage and several of more importance are pending, including 1000 tons for a freight terminal for the Burlington railroad at Chicago and 1000 tons for the Great Northern railroad. In prospect are the Grant Park stadium at Chicago, with probably 3000 tons needed and the Union Station at Chicago, which will require considerable reinforced concrete work. The market appears to be about 1.50c, mill, and 2.00c, from stock.

New Prices Not Attractive

New York, March 14.—Demand for concrete bars here at present is dull, largely owing to the fact that a good deal of tonnage was placed a couple of weeks ago at around 1.35c and 1.30c base Pittsburgh. These prices were not withdrawn until most prospective buyers had been given the chance to place business so that little new business is coming out at the moment. The minimum price at present appears to be 1.40c base Pittsburgh. The largest contract pending here is that involving the construction of the New York American

league baseball stadium, involving 700 tons of bars on which action has not developed.

Concrete Bar Awards Fair

Pittsburgh, March 14.—Fair sized lots of reinforcing concrete bars up to 500 tons each are under consideration here and a few of the smaller sized tonnages recently have been let. The Cambria Steel Co. recently took orders from one interest for in excess of 200 tons for two or three jobs. Some large producers have taken orders for sizable stocks of concrete bars at prices below 1.50c, which is becoming the established quotation on new business. At the moment the full market's spread is 1.40c to 1.50c, base Pittsburgh.

To Award Tonnage Piecemeal

Cleveland, March 14.—No single award of the 2000 tons of reinforcing steel required for the Baldwin reservoir, this city, is to be made by the contractor. The steel will be placed from time to time in such quantities as the work requires. Contractors are asking the mills for the 700 tons for the Ward Bakery Co. job this city, bids for which are to go in this week. Reinforcing bar market continues quotable from 1.40c to 1.50c mill or Pittsburgh, with the probability that a desirable tonnage would go at the inside figure.

Sizable Business Booked

Philadelphia, March 14.—Considerable business in concrete bars has been placed in this district in the past week, attractive tonnages going at 1.35c base Pittsburgh. Included in the business placed at this figure is 800 tons of bars for the new Western Union building for this city. In some case 1.40c has been named the outstanding tonnages but the usual asking price is 1.50c base Pittsburgh.

CONTRACTS AWARDED

Hotel San Juan, Orlando, Fla., 400 tons placed with independent mill by Turner Construction Co.

Mystic Shrine hospital, 110 tons, to W. S. Wetenhall Co.

Capitol extension, Sacramento, Cal., 1000 tons, to the United States Steel Products Co.

Third floor and roof of the George Westinghouse high school, Pittsburgh, 150 tons to the Concrete Steel Co.

Rocky river bridge in North Carolina, 115 tons to an independent fabricator.

Building for the American Woolen Co., Boston, 1100 tons to the Concrete Steel Co.

Two junior high schools, Dubuque, Iowa, 100 tons, to middleman.

Garage building at Milwaukee, 125 tons, to the Inland Steel Co.

Admiral Hotel Co., Chicago, 300 tons, to the Concrete Steel Co.

Western Union building, Philadelphia, 800 tons, to an eastern mill.

CONTRACTS PENDING

Hotel, Johnson City, Tenn., 400 tons, project practically abandoned.

Reilly office building, Wheeling, W. Va., 150 tons to be purchased by the R. R. Kitchen Co., Wheeling.

Viaduct, Ironwood, Mich., 300 tons, award expected this week.

Building for Swigart Paper Co., Chicago, 400 tons, bids being taken.

Freight terminal for Burlington railroad, Chicago, 1000 tons; open bids on general contract March 20.

Children's Hospital and Nurses' Home, Milwaukee, 300 tons, bids being taken.

Great Northern railroad, various locations, 1000 tons, bids asked.

Highway bridge over Mississippi river, 750 tons, bids being taken.

Bridge for the Rock Island railroad at Rock Island, Ill., 1600 tons, bids being taken.

New Car Inquiries Appear

Railroads Ask Bids on 8000—Diversified Buying of Track Material and Steel More Active—Week's Equipment Orders Less

RAILROAD TRACK MATERIAL PRICES, PAGE 718

New York, March 14.—Specifications were issued yesterday by the Pennsylvania railroad for 190 coaches, 35 combination passenger and baggage cars, and 25 combination baggage and mail cars. An inquiry has also been brought out by the Boston & Maine railroad for 64 passenger and combination cars, and 25 milk cars. Freight car inquiry calls for 150 ore cars for the Tennessee Coal, Iron & Railroad Co., and 2750 miscellaneous cars for the Chicago & Northwestern. Orders involve 100 cars for the Westmoreland Coal Co.

The Florida East Coast has ordered 10 locomotives from the American Locomotive Co.

Individual Orders Small

Pittsburgh, March 14.—The larger interests still are curtailing their activities and are practically eliminating light rail buying. Light rails are quoted at 1.40c, base Pittsburgh, although the Carnegie Steel Co. still is quoting 1.45c. The West Penn Power Co., was a recent purchaser of a fair sized tonnage of heavier rails.

Track accessories continue to be bought in fair sized lots although most of the larger orders are understood to have been placed. Track bolts are being sold frequently in lots of 1000 kegs up, the Missouri Pacific recently having placed upward of that number along with a larger order for spikes. The Wabash bought a quantity of tie plates as did the Pennsylvania, the latter taking 200,000 tie plates, 100,000 track bolts and 4000 kegs of spikes. The Philadelphia & Reading is understood to have issued an inquiry for various track supplies. Track bolts are quoted generally at 3.00c, base Pittsburgh, although 2.90c has been done on quantity orders. Tie plates are quoted at 1.70 to 1.90c, base Pittsburgh, according to specifications and spikes are quoted at 2.00c to 2.35c, according to size.

Girder Rails Bought

Boston, March 14.—Stiffening steel prices have stimulated rail orders in New England. The Boston Elevated Co. has taken 2300 tons of girder rails and 1300 tons of tee rails, and the United Electric Co., Providence, R. I., placed an order for 1400 tons of girder rails. In addition to this, smaller users have taken various lots ranging from carload to 100 tons, bringing the total rail order business for the week close to 6000 tons. Inquiry still develops and rail manufacturers are decidedly cheerful over the New England situation.

Buying by All Railroads

Chicago, March 14.—While present demand for cars and rails is not as strong as it has been at times recently, railroads are taking a considerable tonnage of general products and appear to be building up their stocks. Rails are not being bought, as most roads have sufficient already on contract and do not need to purchase further at present. Demand for track fastenings continues and a large aggregate of small orders, ranging from 500 to 1000 kegs each of bolts and spikes, has been booked. This was beside 10,000 kegs of track spikes placed by a Pacific coast railroad under 1.96c base Pittsburgh and 3000 kegs of track bolts at 2.50c Pittsburgh. The Chicago, Milwaukee & St. Paul is moving actively toward the purchase of 4500 cars of various types.

Places Rail Order

Buffalo, March 14.—The Buffalo, Rochester & Pittsburgh railroad has placed 5000 tons of rails with the Lackawanna Steel Co.

Track Material Bought

Philadelphia, March 14.—Considerable interest is being shown here in the inquiry of the Norfolk & Western railroad for 2000 to 4000 freight cars, bids on which close March 17. The Pennsylvania has made an appropriation for 250 passenger cars and has bought 1000 tons of tie plates, 500,000 pounds of track spikes, 100,000 heat-treated track bolts and a tonnage of angle bars. The Atlantic Coast Line has not yet taken any action on its inquiry for 3000 tons of tie plates. It is learned the Virginian railroad has decided not to buy any rails this year.

CAR ORDERS PLACED

Westmoreland Coal Co., 100 hopper cars, to the Cambria Steel Co.

Atlantic Coast Line, 450 steel underframes and superstructures, to the Pressed Steel Car Co. and 50 to the Chickasaw Shipbuilding Corp.

CAR ORDERS PENDING

Chicago, Milwaukee & St. Paul, 4500 cars, bids asked.

Chicago & Northwestern, 2750 freight cars, various types, bids asked.

Tennessee Coal, Iron & Railroad Co., 105 ore dump cars, 70 tons capacity, bids asked.

Chesapeake & Ohio, 1500 steel car bodies, inquiry to be issued soon, with option on 4500 additional.

Pennsylvania railroad, 250 all steel passenger and combination cars, bids being asked.

Boston & Maine, 64 passenger and combination cars and 25 milk cars, bids being asked.

Florida East Coast, 10 cabooses, pending.

Otis Steel Deficit Large

Total loss for the year of $5,189,543, after all charges, is shown in the annual report of the Otis Steel Co., Cleveland. This compares with a profit of $1,141,088 in 1920. Last year's operating loss was $1,288,394. Production in 1921 was but 15 per cent of capacity. Inventory losses charged off amounted to $2,116,789 and a reserve of $490,135 was set up against future possible losses in inventories. Total surplus as of Dec. 31, 1921 was $7,184,707 against 7,508,422 one year before. Net working capital was $5,997,773.

Better Tone in Sheet Bars

Valley Mills Refuse 8000 Tons, Unable To Make Deliveries—Inquiry for Semifinished Material Fair—Skelp Prices Firmer

SEMIFINISHED STEEL PRICES, PAGE 718

Pittsburgh, March 14.—Demand for semifinished material at present is not heavy. Sheet bar demand seems to have been satisfied for the time being, although specifications from regular customers come to large makers here regularly. The general sheet bar market is quoted at $29, Pittsburgh or Youngstown. Occasionally a billet inquiry is received, and $28, Pittsburgh, usually is quoted on small tonnages. Few slabs have been sold this week. Regular customers of large producers have been furnishing orders for small lots of forging billets up to 200 or 300 tons at a time, and $32, base Pittsburgh, appears to be firmly held.

Wire rods still remain at $36, Pittsburgh, and orders continue to come in at about the same rate as they have for the past several weeks. Occasionally a 1000-ton lot is placed.

Skelp is firmer, there being no prices below 1.40c noted this week and the full spread of the market now is 1.40c to 1.50c, base Pittsburgh. Regular customers are specifying in a small way against their skelp contracts.

Buffalo Company Starts Mill

Buffalo, March 14.—Business in the semifinished market appears to be improving somewhat. Accumulation of tonnage has permitted the starting of a mill by the Donner Steel Co.

Refusing Business at Youngstown

Youngstown, O., March 14.—A better tone is noted in the semifinished market this week. Some makers have booked tonnage to the extent of their commitments and are refusing additional business necessitating prompt shipment. About 8000 tons of sheet bars were refused last week owing to the inability of the mill in question to make prompt shipment. Specifications for this commodity are being released right along and some new business ranging from 150 to 200 tons has been coming to those makers in a position to give prompt delivery. Prices of sheet bars range from $29 to $30, Youngstown, the former applying on specification business and the latter on prompt tonnages. Slabs are quotable at $28 to $29, heavy billets $39, and light billets $30, Youngstown. The minimum prices are obtainable on round tonnages although there is a tendency toward stiffening.

Billets Sold in East

Philadelphia, March 14.—Billet sales continue to be restricted to occasional small lots at $28, base Pittsburgh, for rerolling quality and $32 for the forging grade.

Inquire for Sheet Bars

Cleveland, March 14.—More activity is in evidence in the market for semifinished material. An inquiry is current for 5000 tons of sheet bars for an Ohio consumer. A leading steel producer is considering the prospect for restarting its mills. Prices remain unchanged at $29 valley or Pittsburgh for sheet bars, $28 for 4 x 4-inch billets and $36 Pittsburgh for wire rods.

More Pipe

Is Being Bought—Demand Increasing and Operations Are Better

PIPE PRICES, PAGE 718 AND 778

Pittsburgh, March 14.—Seasonal buying of standard merchant full weight pipe, reflecting an improved building situation, has brought an increased aggregate of business to the pipe mills although operations remain practically unchanged. The general average of pipe mill operations in this district is about 70 per cent. Allotments of pipe tonnage going to distributors are increasing and while individual orders remain about the same, the aggregate for a period shows considerable gain. Here and there sizable line pipe tonnages are noted and these are expected to come out. A sizable amount of casing, etc., likewise is being bought. One line pipe tonnage involving about 25 miles of 66-inch is understood to have been placed with a Mahoning valley producer recently. This is for an installation in Wyoming. On the basis of about 20 pounds per foot, this amounts to approximately 1250 tons. Attractive quotations are made on certain large tonnages but as a general rule more of a tendency exists to name the card discounts and stick to them.

In connection with wrought iron pipe, a steadily increasing demand is noted. The market so far this month is better than for a like period in the past two months. The market on seamless tubes is improving and more demand is coming out. Here likewise is more of a tendency to adhere more strictly to the discounts of Nov. 2, 1921. These are as follows: 1¼-inch, 17; 2 to 2¼-inch, 30; 2½ to 3-inch, 38; 3½ to 5-inch, 43, with four points added for carload quantities. For some time past business offered has been so limited that the temptation to quote lower figures was general and the National Tube Co. met competition, but as indicated this condition is rapidly changing and there is more of a strict adherance to the discounts as noted.

Open Bids on Cast

New York, March 14.—Bids were opened here yesterday by the water department on approximately 580 tons of cast iron pipe. This was a general contractor's job and as yet the name of the low bidder has not been announced. Demand generally, for cast iron pipe continues to hold up well and prices, while unchanged, are reflecting considerable strength.

Good Pipe Tonnage Moving

Chicago, March 14.—In spite of larger cities being slow to inquire for their 1922 requirements, pipe producers are enjoying a satisfactory volume of business made up of small lots from contractors, industrial users, railroads and smaller cities. At present inquiries from railroads aggregate fully 1000 tons in the hands of western sellers. No tonnage of importance was sold during the past week, but some important lots are up for bids during the present week. Bids will be opened March 14 on 1400 tons at Milwaukee and at Toledo March 15 on 1000 tons. Bids will be opened at Fort Dodge, Iowa, March 21. No award has been made on 250 tons at Ottumwa, Iowa, or on 100 tons at St. Joseph, Mich., on which bids were taken last week. Prices appear firmer than formerly and the market is steady at about 50 cents higher than prevailed last month.

Business Improving Steadily

Birmingham, Ala., March 13.—The cast iron pipe business in this district continues improving steadily and the indications are that within a short while there will be orders on hand or being worked up which will require a considerable tonnage to fill. The American Cast Iron Pipe Co. and the National Cast Iron Pipe Co. indicate an increasing amount of business coming in with activities assuming large proportions. No doubt now prevails that the spring will see some extraordinary business. Shipments of pipe from this district now are heavier than they have been for more than 12 months. Cast iron pipe prices are showing a little more firmness and intimation was given that an advance is not improbable.

First Furnace

Now Making Merchant Spiegel Since Last Summer—Sales Continue

FERROALLOY PRICES, PAGE 718

New York, March 14.—The New Jersey Zinc Co. last week blew in one of its Palmerton, Pa., blast furnaces on spiegeleisen, making the first time that a merchant furnace has been active on this metal in this country since early last summer. Sales of spiegeleisen during the past week aggregated 300 to 400 tons. The market on spiegeleisen continues to be quoted at $25 to $30 furnace, for 19 to 21 per cent.

Sales of ferromanganese reported here involved only a few carloads of English metal. This was sold on the basis of $62.50, c.i.f. tidewater, which continues to indicate the market.

While some producers of 50 per cent ferrosilicon have advanced their price to $60, delivered, this product still is reported available at $55 delivered, in the Pittsburgh district. New business is light in the general market. A sale of tungsten metal powder was made recently at 40 cents a pound. The quotation of ferrotungsten for importation is somewhat stronger, importers stating that 38 cents per pound contained now is about the bottom. The ferrochrome market continues irregular, with no important contracts reported closed. Prices on foreign ferrochrome carrying 6 to 8 per cent carbon range from 10.50 to 11.50 cents, while domestic makers are quoting from 12 to 15 cents a pound contained, according to quantity. Some business in high grade ferrovanadium has been

done at $3.75 a pound contained. Occasional lots still are reported offering under this price, but the two or three principal makers are asking $3.75 to $4.

More Interest In Manganese Ore

New York, March 14.—More interest is reflected in the manganese ore market than has been customary in a long time. Since the market took definite form, when the Jones & Laughlin Steel Co. early in January bought 20,000 to 30,000 tons of 48 to 50 per cent Brazilian ore at 22 cents per unit, c.i.f. tidewater, numerous offers have been made of Brazilian, Indian and Caucasian ore and one cargo of Caucasion ore has been disposed of. On Inidan ore lately, due to the rise in exchange, 26 cents has been quoted, but it is believed that it actually could be bought at less. On Brazilian ore, 24 cents per unit at tidewater is asked. It is known that no higher than 24½ cents per unit would have to be paid at this time for high grade Caucasian ore.

General Alloy Market Quiet

Pittsburgh, March 14.—A quiet general market still prevails in connection with all ferroalloys although some spots of activity are noted. The Weirton Steel Co., Weirton, W. Va., has closed on its 50 per cent ferrosilicon requirements for a 3-month period, estimated to involve 200 to 300 tons, at $55, freight allowed, which continues to remain the minimum of the market. Other quotations from $56 to $60, freight allowed, were named on this inquiry. One or two small inquiries for ferrosilicon are out.

In connection with ferromanganese, in addition to several inquiries for single carloads, a few for two carloads at a time are noted and the inquiry of the American Steel Foundries for 200 to 300 tons which has been hanging over the market for some time past still is current. The price usually quoted is $62.50, seaboard base, but some large producers will not quote that figure for delivery subsequent to July 1. Spiegeleisen is quieter this week, the needs for it having apparently been satisfied for the time being. The only sale noted involved a single carload of 16 per cent material at around $28 to $30. Nominal quotations are $30, furnace, on 16 to 18 per cent material and $35 furnace, on 19 to 21 per cent. These prices probably would apply to single carload orders with larger inquiries developing lower figures in proportion to their size.

Sells at $65 Seaboard

Chicago, March 14.—One maker of ferromanganese has advanced to $65 seaboard or $73.40, Chicago. Spiegeleisen is dull.

May Build Furnace Soon

Financing of the Oregon Charcoal Iron Co., Portland, Oreg., which is capitalized at $325,000, has been completed, according to A. W. Martin, president of the company. It is the intention of the organization to proceed within the next six weeks upon the construction of a charcoal blast furnace of 90 tons daily capacity near Scappoose, Oreg.

The Nonferrous Metals

Copper and Zinc Higher and Active—Tin Down but Users Buy—Lead Quiet—Aluminum Strengthens

	Copper Electro delivered	Copper Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	†Nickel spot
March 8....	13.00	13.12½	29.25	4.70	4.65	17.50	4.20	34.00
March 9....	13.00	13.12½	29.12½	4.70	4.65	17.50	4.20	34.00
March 10....	13.00	13.12½	29.50	4.70	4.65	17.50	4.20	34.00
March 13....	13.05	13.20	28.87½	4.70	4.70	17.75	4.20	34.00
March 14....	13.05	13.20	28.50	4.70	4.67½	17.75	4.20	34.00

†Open market quotation.

NEW YORK, March 14.—Copper and zinc prices have moved steadily though slowly upward through the past week, with a good volume of business. Lead prices have held steady. Tin quotations have fluctuated, with a large net decline for the past five business days, due partly to the slump in sterling exchange rates. Aluminum is ½ to 1c higher for all descriptions than two weeks ago. Antimony has been dull and weak. The political dissensions in the British empire have been ascribed as the reason for the sterling break.

About 3000 or 4000 tons of electrolytic copper were sold for export over the past few days, principally to Great Britain, France and Germany. Japan also has been a good buyer, in view of the possibility that an import duty will be levied on copper in Japan. The brass mills now are operating at 50 to 60 per cent of the rate in the prosperous year 1920. Domestic sales have been made the past few days at 13c, delivered, for prompt delivery, with some agencies asking as high as 13.25c. No substantial tonnage, it is believed, could be obtained under the latter figure at present. In the outside market, 13c refinery, is being quoted for prompt copper. Demand for casting copper for export continues good, principally for the Orient, and business is being done at 12.62½c to 12.75c refinery. Lake is holding at 13.12½c to 13.25c, delivered.

Prime western zinc has been sold at 4.70c, East St. Louis, representing an advance of about 10 points during the week, but some still can be had at 4.65c. Both galvanizers and sheet zinc mills have been buyers. The former price is equivalent to 5.05c, New York. The decline in exchange has reduced the British zinc price so that exports of zinc from this country are less likely. The American Zinc institute monthly statistics show a decrease in stocks during February of 1554 tons, stocks Feb. 28 being 64,124 tons.

Lead business has been rather quiet the past week, with prices holding 4.40c to 4.42½c, East St. Louis, 4.70c to 4.75c New York, in the outside market, the leading interest maintaining 4.70c, New York. A reduction in lead freight rates from East St. Louis to Central Freight association points is expected to become effective by the middle of April.

Tin quotations have fluctuated between 28.50c and 29.50c, following the import costs. Both spot and futures are commanding the same price, the ample supply of March delivery tin having eliminated the premium on nearby. A good business has been done, principally consisting of tinplate makers' purchases and professional trading, but the alloy trade also has been active. Some Chinese No. 1 tin sold recently for shipment via London, at 28c.

Automobile foundries have been buying aluminum more actively than in many months and aluminum prices are strong. All cheap offerings lately have been quickly absorbed. Supplies of virgin 98 to 99 per cent ingot under 17.50c are scarce and the market is more nearly 18c on this grade; 18.50c to 19c on 99 per cent. Aluminum scrap prices to users also are stronger, new clippings being 14.50c to 15c; old sheet 11c to 12c; old cast 10.50c to 11c and borings 6.50c to 7c.

Mill Products

(Base prices, f.o.b. mill)

SHEETS	
Copper, hot rolled 24 oz., min....	20.25
High brass	16.25
Zinc, ga. 9 to 18 (plates ½c less)	8.00
Lead, full sheets (cut ¼c more)..	7.25
SEAMLESS TUBES	
High brass	18.00
Copper	20.75
RODS	
High brass, round, ¾ to 2½ inch	14.25
Naval brass rod.....	17.25
WIRE	
Copper	14.75 to 15.25
High brass	16.75

Old Metals

(Dealers' Buying Prices)

HEAVY RED BRASS	
Cleveland	8.00 to 8.50
New York	7.50 to 7.75
HEAVY YELLOW BRASS	
New York	5.50 to 5.75
Chicago	5.25
Cleveland	5.00 to 5.50
ZINC	
New York	2.50 to 2.75
Cleveland	2.00 to 2.25
Chicago	2.00 to 2.50
HEAVY COPPER AND WIRE	
Cleveland	10.00 to 10.50
Chicago	9.50
New York	10.25
RED BRASS TURNINGS	
New York	7.00 to 7.25
Cleveland	6.50 to 7.00
Chicago	6.00
YELLOW BRASS TUBING	
Cleveland	4.50 to 5.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	4.50 to 5.00
New York	5.00 to 5.25
Chicago	4.50
ALUMINUM BORINGS	
Cleveland	4.00 to 4.25

Ore Shippers Notified of New Freight Rates

Cleveland, March 14.—Iron ore shippers have been formally notified by railroad companies that they will file new rates on ore for shipment from lower lake ports to interior furnaces, to become effective April 17. The reduction is to be 20 per cent, which will bring the rate to the valleys down from 91 cents to 71 cents, or only 6 cents more than the rate in effect prior to the general 40 per cent freight advance made in August, 1920. The new rate to Pittsburgh will be $1.02 as compared with the present rate, $1.27½. The following gives the new rates for line hauls as worked out on the basis of the interstate commerce commission's rule for the disposition of fractions, compared with present and former rates:

Lake Erie ports to—	Rates prior to 40 per cent advance Aug. 26, 1920	Present rates	Rates reduced 20 per cent	Saving per ton
Valleys	$0.65	$0.91	$0.71	$0.20
Dover	.70	.98	.785	.195
Midland	.79	1.105	.885	.22
Pittsburgh	.91	1.275	1.02	.255
Jackson (Toledo)	.715	1.00	.80	.20
Jackson (Cleveland)	.89	1.245	.995	.25
Ironton, Hamilton	.99	1.385	1.11	.275
Johnstown	1.03	1.44	1.15	.29
Lehigh Valley	1.54	2.155	1.725	.43
Sparrows Point	1.59	2.225	1.78	.445

The 20 per cent reduction also applies to loading and storage charges, but not to spotting of cars at the furnaces.

Ore shippers believe that the interstate commerce commission will allow the railroads to make the 20 per cent reduction, despite the fact that the commission last December refused to sanction a 28 per cent reduction for the first quarter of 1922. The commission's objection sustained the protest of Buffalo furnace companies. These furnaces are reported to be preparing to protest against the 20 per cent reduction, but the shippers believe that with coal and coke rates cut, the Buffalo furnaces will withdraw their objection. Shippers regard it as certain that coal and coke rates will be reduced.

Works in Receivership

The Defiance Machine Works, for 70 years the leading industry in Defiance, O., has been placed in the hands of a receiver as the result of action by Federal Judge John M. Killits, Toledo, on a motion of the Chicago Screw Co. E. M. Hummer, manager of the company, was named receiver. The receivership of several companies heavily indebted to it, and depression in industry, according to the court, make it impossible for the company to meet current obligations, despite the fact that assets exceed liabilities. The company manufacturers metal and woodworking machinery.

Army and Navy Offer Steel

Washington, March 14.—On April 5, at the Washington navy yard, the navy department will open bids on 211,000 pounds of shafting and gear steelk located at Newport, R. I.; and 150,495 pounds of medium steel rivets, 171,875 pounds of medium steel tap rivets 74,235 pounds of medium steel counter sunk head rivets, and 140,585 pounds of high tensile steel rievts, all at New York navy yard. Inventories of surplus steel of the war and navy departments and the shipping board, expected to be completed March 1, will not be ready for another month, and doubt is expressed whether the surplus can be marketed by June 30, as planned. The navy may shortly offer from 5000 to 7000 tons of steel plates.

Plans 28 New Cupolas

Detroit, March 14.—Twenty-eight new cupolas will be installed in the River Rouge plant of the Ford Motor Co. during the coming summer, it was announced today by officials of the company. The present equipment consists of 14 cupolas but officials feel that production demands will soon work up to the point when the entire 42 will be demanded for simultaneous operation.

Unfilled Tonnage Less

Further reduction in unfilled bookings is announced by the United States Steel Corp., in its report for February, the total being 4,141,069 tons. This is a decline of 100,609 tons. Chiefly it is attributed to improved operations and better shipments, rather than to lack of business. Comparisons follow:

Date	Total	Change, tonnage	Change, per cent	
Feb. 28, 1922	4,141,069	100,609	2.307	—
Jan. 31, 1922	4,241,678	26,736	0.0062	—
Dec. 31, 1921	4,268,414	17,872	0.004	+
Nov. 30, 1921	4,250,542	36,287	0.84	—
Oct. 31, 1921	4,286,829	273,841	6.004	—
Sept. 30, 1921	4,560,670	28,744	0.63	+
Aug. 31, 1921	4,531,926	298,398	6.3	—
July 31, 1921	4,830,324	287,544	5.59	—
June 30, 1921	5,117,868	364,619	6.2	—
May 31, 1921	5,482,487	362,737	6.2	—
April 30, 1921	5,845,224	439,541	6.8	—
Mar. 31, 1921	6,284,765	649,102	10.32	—
Feb. 28, 1921	6,933,867	639,297	8.21	—
Jan. 31, 1921	7,573,164	574,958	7.59	—
Dec. 31, 1920	8,148,122	873,359	9.68	—
Nov. 30, 1920	9,021,481	815,371	8.26	—
Oct. 31, 1920	9,836,852	537,952	5.16	—
Sept. 30, 1920	10,374,804	430,234	3.56	—
Aug. 31, 1920	10,805,038	313,430	5.4	—
July 31, 1920	11,118,468	139,651	.7	+
June 30, 1920	10,978,817	38,751	0.35	+
May 31, 1920	10,940,466	580,719	5.6	+
April 30, 1920	10,359,747	467,672	4.51	+
Mar. 31, 1920	9,892,075	389,994	3.94	+
Feb. 29, 1920	9,502,081	216,640	2.3	+
Jan. 31, 1920	9,285,441	1,020,075	11.00	+

Basing Point

Hearing at Minneapolis Ends—Next Session at Chicago March 20

Minneapolis, March 14.—Consumers in this territory who have complained to the federal trade commission of the practice in the steel industry of selling steel products at prices based f.o.b. Pittsburgh, last week completed their personal and direct testimony in the basing point hearing which was held here by the commission. The third and next point at which the commission will proceed with taking of testimony will be Chicago where the hearing starts March 20.

Outstanding in the testimony given here last week was that of George M. Gillette, president of the Minneapolis Steel & Machinery Co., who declared that if the federal trade commission ordered the United States Steel Corp. to discontinue selling steel f.o.b. Pittsburgh, the independent steelmakers would not be able to continue the practice. He also declared that if the independents were to go on a strictly competitive basis, the corporation itself would not be able to maintain it.

Besides Mr. Gillette, witnesses appearing before Trial Examiner Bennett included W. O. Washburn, managing partner of the American Hoist & Derrick Co., St. Paul; E. H. Reudelsterz, sales manager, and R. B. Deatherage, both of the Puffer-Hubbard Co., Minneapolis; E. T. Stone, purchasing agent of the Minneapolis, St. Paul & Sault Ste. Marie railroad; R. J. Elliott, assistant purchasing agent of the Northern Pacific railroad; Samuel A. Challman, building inspector of the Minnesota state board of education; A. H. Schuett, structural engineer for the board; Downer Mullen, secretary of the state board of control; J. T. Ellison, bridge engineer for the state highway commission; and M. C. McMillan, superintendent of industries at the state penitentiary.

Testimony of the most of the witnesses tended to show losses incurred by their companies or departments as a result of buying steel from western mills and paying them prices equivalent to the price of the steel at Pittsburgh plus freight to destination. This was in line with statements made by steel consumers at Milwaukee.

C. A. Severance and W. W. Corlett, attorneys for the corporation, continued their efforts to show the profits of the consumers but failed to break down the trade commission's adverse ruling. Mr. Severance moved striking out of the tesimony of the railroad representatives, on the grounds that it had no bearing in the case.

Coast May Get Freight Cut

Buyers Hesitate, Expecting Lower Rate Announcement—Inquiry Is Made for 650 Tons of Pig Iron—Some Warehouse Prices Revised

SAN FRANCISCO, March 11.—Reports of strengthening iron and steel markets in the East have caused consumers to show more interest in the quotations made for mill products. The result of the announcement, made by several independent companies in the Pittsburgh and Chicago districts of a 1.50c base Pittsburgh price on plates, bars and shapes is being watched closely by the local trade. In the opinion of some steel men consumers who have hesitated in the past to place tonnage because of doubt as to whether the bottom had been reached, will shortly begin to specify more freely. Possible reductions in freight rates in the near future appears to be the paramount consideration at present.

Pig Iron and Coke

The largest inquiry for iron that has come up in this district for sometime is one put out by the Southern Pacific Co. for 500 tons of 1.75 to 2.25 silicon iron and 150 tons of 2.25 to 2.75 iron, which is expected to be closed this week. A slightly better demand for coke in carlots is reported by dealers. The Southern Pacific Co. has not yet closed for the 600-ton lot of foundry coke inquired for last week. Southern coke is being quoted at from $21 to $22 a ton delivered.

Bars, Plates and Shapes

Few awards of jobs involving consequential tonnages of re-inforcing bars have been made in the past week. Business pending is more sizable than orders being placed at the present time. One lot of 110 tons for the Mystic Shrine hospital was awarded to W. S. Wetenhall Co. and one lot of 1000 tons for the Capitol Extension at Sacramento to he United States Steel Products Co. This latter lot is reported to have been sold at 2.26½c delivered Sacramento or 0.485c per pound under the price quoted by the local mills. Demand for merchant steel bars is quiet. Orders are more numerous and tonnages larger for cold-rolled material. The market for this class of material appears to be 1.90c base Pittsburgh generally.

While no large inquiries came out during the past week for plates a better volume of business is reported.

General demand for structurals has been increasing steadily and the tone of the market remains encouraging.

Other Finished Material

One wire interest says the daily average of sales in February increased 20 per cent over January and that the volume of business coming in is about normal. Demand for wire rope from the lumber interests is favorable and some demand is coming in for fencing from the country districts. Prices are firm at 2.25c for wire and 2.40c for nails.

Municipal lettings for cast iron pipe have not been heavy of late, but a better demand from private sources is reported. Dinuba will shortly be in the market for a fair sized tonnage of 4-inch pipe.

Scrap Material

Melting steel has not moved appreciably during the past two weeks, as mills have piled about all they can handle. A total of about 750 tons is all that has been contracted for by the mills this week. All interest in the southern part of the state has taken 1000 tons of melting steel at $10 per ton delivered. There appears to be a shortage in cast scrap, one dealer being forced to bring in 1000 tons from the Gulf of Mexico. Prices on this class of material range from $22 to $23 a ton delivered. An oil well tool manufacturing company has purchased 500 tons at $22 a net ton delivered.

Warehouse Market

Warehouse interests report a fair demand for out-of-stock material and indications all point to a good month. A reduction in the price of stock black and galvanized sheets and wire and cement coated nails has been made in Los Angeles, as follows: Black sheets from 6.00c to 5.60c; galvanized from 6.75c to 6.45c; wire nails from 4.35c to 4.25c, and cement coated from 3.55c to 3.35c.

Upturn Pronounced

In Northwest Markets—Bars and Shape Prices Now Are Lower

Seattle, March 11.—Conditions in the iron and steel market continue to show improvement. Several contracts are in sight and the general tone is better.

The trade is interested particularly in the bidding for the city's new pipe line tenders to be opened March 10. This work calls for between 12,000 and 13,000 tons of plates for riveted pipe.

Much interest is attached to the call for bids for the last bridge contract for the Alaska railroad specifications for which have just been issued. This calls for about 2,883 tons of steel in the superstructure.

Pig Iron and Coke

The demand for pig iron is limited although there is always a small tonnage moving. With slightly increased foundry production the demand for pig iron is somewhat stronger. Some Oriental iron has been offered at as low as $23.

Plates, Bars and Shapes

Bars are in demand with considerable repair and construction work under way. Several large building jobs are about to be awarded all of which is adding to the demand for bar stock. Confirmation is lacking of a late report that an inquiry from the Orient has been received for 5000 tons of plates.

Other Finished Material

Wireless radio has become so popular in this territory that dealers report that hard drawn copper wire is almost impossible to get. Local stocks are depleted. Seattle is advertising for 14,150 feet of 1¼ inch and 8,250 feet of 1 3/16 inch street railway cable.

Old Material

Increased demand for No. 1 cast iron scrap has firmed the market which today is between $17 and $18 with supplies low. Expectations are that this will rise rapidly to $20 if the foundries continue to buy.

One mill has an inquiry for 600 tons of bars from China and 900 tons from Japan although the prices indicated cannot be met by local manufacturers.

Steamship lines operating from Atlantic ports are bringing increased quantities of steel and iron products to this coast, the new water rate being attractive. For the first time, large shipments of tin plate for the fish and fruit canners have come by water from eastern gateways.

Union Oil Co. has purchased a waterfront site at Aberdeen, Wash., for an oil terminal. Four tanks each of 20,000-gallon capacity and a warehouse are to be erected, costing about $250,000.

Recent estimates of big constructions under way in Seattle show a total of approximately $3,750,000. Proposed new work in the close future totals nearly $5,000,000. These include a new University of Washington library to cost $1,000,000 and a 13-story office building estimated at $1,000,000. Officials of the Swedish state railways are in Seattle and vicinity making a study of the Chicago, Milwaukee & St. Paul railway's block signal system.

The shipping board steamer HANLEY has arrived from Atlantic ports. At various terminals on this coast she discharged 9500 tons of tin plate, etc.

Specifications for the single track structural steel bridge to be erected on the government railroad at Nenana, Alaska, show that a total of 2883 tons of steel will be required in the superstructure. This will consist of 425 tons of nickel steel, 1124 tons of silicon steel and 1334 tons of carbon steel. Bids will be opened here May 1.

C. F. Uhden, hydro-electric engineer for Seattle's Skagit power project is preparing specifications for the concrete and steel power house which will be 168 x 90 feet and 122 feet high with three floors.

J. A. McEachern Co., Seattle, was the low bidder for the sea wall to be built for the navy at the Puget Sound navy yard. Award of the contract is expected daily. The wall will be 1200 feet long and 57 feet high, the low bidder's figure being $418,000. On an alternate bid for a lighter wall 950 feet long the low bid by the same company was $246,000.

One of the largest marine jobs recently awarded here was obtained by Todd Dry Docks, Inc., on a bid of $115,383, for repairing the British steamer NARENTA which was seriously damaged by running ashore.

Export Prices Are Still Declining

Steel Products Co. Meets European Competition in South America on Wire—Many Miscellaneous Merchant Orders and Inquiries are now in Market—Chinese Ports Congested—Exporters Lose on German Material

NEW YORK, March 14.—Export iron and steel orders are not keeping pace with those of last December when the business is measured by tonnage, but it is believed there is a healthier undertone to the buying. The size of the orders now being received is small, but the orders are coming largely from foreign merchants who desire to replenish stocks. All of this buying is predicated upon the low price which is prevailing in this market. While much was heard during the past week regarding advances in the price on domestic orders, there was no such increase in the quotations on similar materials going to export.

The Jones & Laughlin Steel Co. is said to have advised its export clients it has no further capacity for taking export orders, and until the threatened coal strike is definitely out of the way it would prefer not to entertain any more orders. Unless the order is small and the material can be run through the mill as an end of a domestic order already in hand, the company does not care to take the business.

The other mills have not given any indication of their stand in the matter of the coal strike and exporters report that prices on material intended for foreign shipment remain where they have been for the past week or more. If the orders now being booked are any measure of the market, then the price on barbed wire has declined to a point where American mills can compete with European wire in the South American markets. A report was current here last week that the United States Steel Products Co. has sold quantities of barbed wire and nail wire in South America. Not only are the exporters here reviving the barbed wire business in South America but they are also quoting bars to South America at a price which moves the goods.

An independent exporter reported last week the sale of some staples and of barbed wire to Brazil. Since the first of the month this agency sold Brazil approximately 50 tons of barbed wire. Approximately 1000 reels of this wire were sold on the basis of $2.50 per reel, c.i.f., Rio de Janeiro.

During the past several months a slight increase in some prices for export may have been noted but this was due to particular conditions. For instance, last fall the South Manchuria railroad purchased 15,000 tons of rails from an American mill on the basis of $27 per ton, mill. Rail orders have been numerous since but the tonnages have not been so large. About two months ago another tonnage of rails for the Orient was sold for $34 per ton, Pittsburgh base. Here was an increase of approximately $7 per ton in the price. Since then foreign rail orders have declined sharply and the only important feature now is another inquiry for 7500 tons by the South Manchuria railroad.

The present condition in the American market might have a reflex effect in the export market were conditions normal. The export inquiries are stated in small quantities and these can be easily held off if any attempt is made to advance prices. As a matter of fact the shipments to the Orient are now crowding the steamships and the movement on current business is extremely heavy. Chinese trade is temporarily disrupted by reason of the prolonged strike at Hong Kong. Steamship companies are having considerable trouble there and shippers have been requested to hold off their shipments.

China still is buying copper. It is wanted primarily for coinage purposes. An independent agency reported the sale of a small quantity of galvanized wire to China. Another agent has sold China several carloads of scrap, shorts and of black sheets. Among the Chinese inquiries now in the market is noted one for some tank plates and another for a small amount of galvanized wire. The Philippines have purchased 1400 kegs of wire nails and some sheet copper.

Japan is no longer favoring American sellers with large individual orders, but the latter are numerous. One independent house reported the sale of 350 tons of sheets to Japan, 30 tons of nail wire and 1500 kegs of nails.

Much was made of the Japanese purchase of 18,000 base boxes of tin plate in the United States, but it is now learned that country purchased an even larger quantity of tin plate in Europe. Japanese orders for bars, sheets and rails have been numerous. The sheet orders have been in sizes from 400 to 500 tons each. One independent house reported the sale of 2000 tons of sheets to Japan in one order. This house has sold Japan some 3000 tons of sheets so far this month, and has also sold 1000 tons of bars to the same destination. Japan also has purchased 20 miles of 12-pound rails.

A constant flow of material is noted to Europe, in extremely small quantities. Europe is not in a position to purchase large tonnages, and it is reported by those traders who have just returned from there that the prospects are that Europe will not be in a position to make such purchases for some time. Holland is again buying copper wire from the United States. Prior to December Holland was buying copper wire from Germany.

Those traders who thought they were going to make considerable money by handling German steel products are now reaping the harvest of their misjudgment. Considerable money has been lost and much more is threatened according to all accounts. The German steel which has been delivered in the Orient on order of American traders has arrived in bad condition. A shipment of German nails to China is cited. This arrived packed in fish barrels and other miscellaneous containers. The appraiser examined the nails and passed them as junk.

Another effort was made to bring German nails in the Pacific coast markets of the United States. In all some 200 kegs of these nails have arrived. Examination showed that the nails were imperfect. It was said that at least three different gages were included in one keg. The first shipment was so unsatisfactory that the agent handling the material cabled to Germany and canceled the remaining 8000 kegs which were yet to be shipped.

Britain's Export Prices Continue To Decline

London, March 2.—Prices at which British exports of iron and steel products were billed out in January, according to custom house returns, show a continuation of the decline has been going on for over a year. The invoiced quotations for the principal products in January were as follows:

	Per Gross Ton Sterling £ s d	Dollars
Foundry and forge pig iron..	5 14 6	$25.10
Ferromanganese	14 6 0	62.75
Plates	15 4 6	66.75
Galvanized sheets	21 3 4	88.50
Tin plate	24 13 6	108.00
Carbon steel blooms and billets	17 5 0	75.75

German Prices Again Advanced

Increased Railroad Rates, Fuel Costs and Taxes Bring Out Higher Prices—250,000 English Machinists Are Locked Out by Their Employers—British Iron and Steel Production Gains—Trade Balance Favorable

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, March 13.—German prices have been advanced again on account of higher railroad freight rates, fuel costs and taxes; this bringing coke and finished steel above the American price level and pig iron to a parity with American prices. Semifinished material, sheets, wire and bands are still low. German furnace coke is now 878 marks ($3.51) per ton; foundry coke, 913 marks ($3.65); No. 3 foundry iron, 4136 marks ($16.54); hematite, 4744 marks ($18.97); billets, 5800 marks ($23.20; sheet bars, 6650 marks ($26.60); rails, 6800 marks ($27.20); bars, 7500 marks ($30); shapes, 7800 marks ($31.20); plates, 8100 marks ($32.40); wire, 8700 marks ($34.80) bands, 9000 marks ($36); sheets, 9875 marks ($39.50).

In England 250,000 members of the Amalgamated Engineering union, otherwise the organized machinists, have been

Sterling—$4.29½

locked out on account of their insistence on having their shop committees consulted on questions of overtime work, which the employers claim is interference with managerial functions. Foundrymen and general shop workers are unaffected, agreeing to take a new ballot; and serious difficulty is not now expected.

Production of pig iron in Great Britain in February amounted to 300,100 tons, as compared with 288,000 tons in January and 275,000 tons last December. One hundred and one stacks were in blast on the last day of February. Three more stacks are being blown in.

Production of steel in Great Britain in February amounted to 415,000 tons as compared with 330,000 tons in January and 381,000 tons in December.

India and Austria are buying black sheets, pipemakers are inquiring for American skelp and there are also inquiries current for American wire. Home producers are quoting skelp at £10 10s ($45.09); plain wire, £18 ($77.22) and galvanized wire, £21 ($90.09).

The French plate syndicate has given shipbuilders a 90-day option on 50,000 tons of open-hearth hull plates at 600 francs ($54) and a tonnage of boiler plates at 675 francs ($60.75) per ton, delivered. The Finland State Railways are inquiring for 13,000 tons of rails, bids to close at Helsingfors, April 3.

British iron and steel exports for February totaled 224,000 tons compared with 261,000 tons in January and 205,274 tons in December. February imports were 65,000 tons compared with 89,000 tons in January and 161,528 tons in December. The adverse merchandise trade balance in February was only £866,000 sterling. When the specie exports are taken into account this leaves a visible favorable balance of £224,000, representing a balance of trade in Great Britain's favor for the first time in many years.

Improvement in America Encourages Britons

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

BIRMINGHAM, Eng., March 2.—Outside of the pig iron market it would be difficult to find any substantial improvement. The center of the movement in pig iron is Cleveland, where export business seems to be showing a decided revival. Several smelters in that district have sold all the iron they have for disposal until April. The importation of continental material has ceased, and the home foundries are taking more iron. Hematite is in very good demand with the result that prices are rising, the new average being about £4 17s 6d ($21.54) for mixed number. Some firms are asking £5 ($22.10).

Even the busiest furnaces are said to be producing at a loss, and a disquieting factor coming into greater prominence is the rising price of coke, values having increased from 1 shilling ($0.22) to 5 shillings ($1.10) per ton. The cokemakers have been encouraged by inquiries from the Continent, and they claim to be able to obtain 3 shil-

Mark—$0.005

lings ($0.66) more for their coke than is obtainable from home consumers. In the northeastern district as much as £1 10s ($6.33) per ton, delivered, is being asked of ironmasters, although some inferior qualities can be bought as low as £1 8s ($6.18). Where an increase of 5 shillings ($1.10) is made in coke, the smelter figures an increased cost in production of 8 shillings 6 pence ($1.847) per ton. Any attempt to get this from the consumer would be considered absurd. In the Midlands the largest increase in quotations has been 5 shillings ($1.10) per ton and the general view is that in no case has this been obtained.

The pig iron revival does not appear to have touched Scotland, where no increase in the number of furnaces at work is reported. But the demand has improved on the West coast, where eight furnaces are now at work and another is about to be relighted. The ferromanganese demand seems to be improving there, and may require the relighting of another furnace.

Threats of an extensive strike in the engineering trade are ominous, and if this develops the demand for foundry iron must be affected. The dullness of engineering, however, has been greater than within living memory, and the effect of the strike would be minimized.

The development of business in the finished and semifinished markets has been very disappointing. The effort to maintain billets at £7 19s ($33.15) has not been successful, consignments being obtainable in Birmingham from Wales at £7 5 s ($32.04). Belgian billets apparently are not now on offer. But a Charleroi firm is offering Belgian steel joists and channels at £8 ($33.36) f.o.b. Antwerp, steel bars at £8 15s ($38.67), steel hoops at £13 ($57.46) and Belgian No. 3 iron at £8 15s ($38.67). The quotation for steel bars is considered an absurd figure, as English bars of excellent quality can be delivered to the consumer

Current Iron and Steel Prices of Europe

British Market

Home Market Prices. Gross Tons at Works or Furnace.

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	29.00	6 15 0
Sheet bars	29.00	6 15 0
Wire rods	38.66	9 0 0
FINISHED STEEL		
Steel bars, England, ¾ to 3-inch	37.59	8 15 0
Plates, ship, bridge and tank, England	40.81	9 10 0
Plates, ship, bridge and tank, Scotland	40.81	9 10 0
Beams, England	40.81	9 10 0
Beams, Scotland	40.81	9 10 0
Sheets, black, 24 gage	45.10	10 10 0
Sheets, galvanized, 24 gage	67.65	15 15 0
Rails, 60 lbs. and over	34.36	8 0 0
Tin plate, base box, 108 lbs.	3.87	0 18 0
Steel hoops	47.25	11 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.48	5 0 0
Hematite, West Coast, Mixed Numbers	22.01	5 2 6
Middlesbrough Basic	19.33	4 10 0
No. 3 Foundry, Middlesbrough	19.33	4 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	18.26	4 5 0
No. 3 Foundry, Northamptonshire	17.18	4 0 0
No. 3 Foundry, Staffordshire	18.26	4 5 0
No. 3 Foundry, Scotch	20.94	4 17 6
Ferromanganese, 76 to 80 per cent	64.43	15 0 0
Ferromanganese, 76 to 80 per cent, for export	62.28	14 10 0
COKE		
Yorkshire furnace	4.51	1 1 0
Yorkshire foundry	6.44	1 10 0

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	35.04	400
Basic Bessemer, Lorraine	21.46	245
Foundry, Longwy, No. 3, sand-cast	20.59	235
Foundry, Longwy, No. 3, chill-cast	21.46	245
Foundry, Longwy, No. 2, sand-cast	21.90	250
Foundry, Longwy, No. 2, chill-cast	22.78	260
Ferromanganese, 76 to 80 per cent	82.78	945
COKE		
French furnace	9.46	108
German furnace, f.o.b. frontier	7.79	88
French foundry	11.56	132
SEMIFINISHED STEEL		
Blooms	30.66	350
Billets	33.73	385
Sheet bars	36.35	415
FINISHED STEEL		
Steel rails	48.18	550
Merchant bars	41.61	475
Angles	41 61	475
Normal beams and profiles	42.49	485
Plates, ship and tank, 10 millimeters and thicker	57.82	660
Plates, bridge and tank, 5 to 10 millimeters	62.20	710
Sheets, black, 3 millimeters	71.83	820
Sheets, blue annealed, 2 millimeters	91.98	1050
Shafting, cold-drawn, 40 to 60 millimeters	72.27	825
Bars, 2 per cent nickel steel	96.36	1100

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	19.27	235
Basic open-hearth, Belgian	20.09	245
Gray forge, Belgian	19.68	240
Foundry, No. 3, Belgian	20.09	245
Foundry, No. 3, Luxemburg	20.09	245
Foundry, No. 3, Lorraine	20.91	255
SEMIFINISHED STEEL		
Blooms	27.88	340
Billets	28.29	345
Sheet bars	30.34	370
Wire rods	41.82	510
FINISHED MATERIAL		
Standard rails	43.05	525
Merchant bars	34.03	415
Normal beams and profiles	31.57	385
Plates, 5 millimeters and thicker	39.36	480
Sheets, black, 3 millimeters	41.82	510
Sheets, galvanized, 1 millimeter	116.85	1425
Plain wire	57.40	700
Galvanized wire	69.70	850
Wire nails	41.41	505

All prices are f.o.b. furnace or works.

German Market

Prices Last Reported

	$	Marks per metric ton (2205 lbs.)
PIG IRON		
Hematite, Oberhausen	18.26	4744
Foundry, No. 3, Oberhausen	15.92	4136
Bessemer Stahleisen, Siegen	14.03	3644
COKE		
Ruhr furnace	3.38	878
Ruhr foundry	3.52	913
SEMIFINISHED STEEL		
Billets	22.33	5800
Sheet bars	25.60	6650
Wire rods	16.94	4400
FINISHED STEEL		
Standard rails	26.18	6800
Merchant bars	28.88	7500
Structural shapes	30.03	7800
Ship plates	31.19	8100
Medium plates, 3 to 5 millimeters	31.19	8100
Sheets, below 3 millimeters	38.02	9875
Tin plate	75.08	19,500
Plain wire	33.50	8700
Bands and strips	34.65	9000

All prices are f.o.b. furnace or mill.

at £9 5 s ($40.89). On the score of quality, the Belgian iron will hardly now be looked at in competition with Staffordshire iron, the quality of which is well maintained.

The cable from THE IRON TRADE REVIEW last week, speaking of heavy buying and specialty naming the underquoting by British mills for thousands of tons of cotton ties on American account was encouraging. It is expected here that the business will be placed either in Barrow or with one of the large Lancashire mills. Staffordshire, confronted by heavy railway rates, has already decided that the business is unlikely to come this way.

While the recovery of pound sterling coinciding with the fall in the bank rate is regarded as indicating a return of sounder conditions internationally, British manufacturers are fully alive to future American competition.

French Foundries To Get German Coke

European Staff Correspondence

PARIS, March 2.—During the week an arrangement has been concluded by which the foundries will receive German reparations coke under conditions similar to those applying to blast furnace operators. This concession has been obtained from the ministry of public works as a result of the efforts of the general syndicate of French foundries working in co-operation with the Comite des Forges. Until further notice 6000 tons of

Franc—$0.087

German coke will be allotted monthly to foundrymen. Those nearest the German frontier will be charged a supertax which will serve to indemnify plants in remote districts for their extra freight charges. In this manner a uniform price will be fixed for foundry coke.

The price of furnace coke was fixed for February at 88 francs ($7.65), German frontier. The cost laid down at blast furnaces in the Lorraine district was approximately 94 francs ($8.15) as compared to 97 francs ($8.45) for Longwy consumers.

The plans for a selling syndicate among iron and steel producers in allied countries seems to be limited to rails and the question of inviting Germany to participate later is still pending. It is believed that the reconstitution of the Comptoir Siderurgique de France will be concluded soon. It it expected that the renewal of the comptoir will steady prices somewhat. The increased activity in the market toward the close of 1921 was not of long duration and the outlook at present is unfavorable. The brief revival was the result of the upward tendency of prices and a sudden increase in demand as stocks were low and buyers hastened to cover their requirements. British competition, even when not active, is ever menacing. On the other hand France is exporting practically nothing to the United Kingdom. German competition is active in the international and home markets.

Coke deliveries to French furnaces from the Ruhr district fell off considerably during the German railway strike and Lorraine furnaces reduced production. Stocks of coke were practically exhausted but deliveries will soon become normal.

The price of hematite pig iron remains unchanged at 400 francs ($34.80) f.o.b., centers of consumption. This figure is quoted officially but it is understood that producers are willing to go as low as 375 francs ($32.60) per metric ton on attractive business. Stocks of foundry pig iron have been accumulated and a number of important firms are in position to make immediate shipments upon orders it is understood.

Semifinished products are firm. Open-hearth steel is more in demand than basic-bessemer. During January the Comptoir Siderurgique booked orders for 40,000 tons, the greater portion of which is for the devastated regions. The prices of beams is firm at 475 francs ($41.30). Merchant bars and angles are still quoted at 450 francs ($39.10) to 470 francs ($40.90) per metric ton.

The situation in the plate and sheet department remains unchanged. English sheets are still coming into the French market owing to the inability of French mills to make prompt deliveries.

Belgian Market Dull; Prices Receding

European Staff Correspondence

BRUSSELS, March 2.—The Belgian iron and steel market is stagnant and there is a tendency toward lower prices. The unfavorable condition of the market is due to the unsettled political and economic situation, and to the falling off of exports which is becoming more pronounced. The downward tendency of prices has caused buyers to hold off.

Foreign competition in the home market is stronger than ever, Great Britain and Germany being especially active. French exporters have practically withdrawn from Belgium partly on account of the recent appreciation of French exchange. Luxemburg at present is also heavily handicapped owing to the difficulties she is experiencing in obtaining coke.

There is no doubt in the minds of the leading Belgian producers that the only remedy to the situation is to be found in reducing their costs. The first step in this direction will be a reduction in wages. It is rumored that wages will be reduced 20 per cent by April 1.

The rail department shows the greatest activity. However, since the last rail orders reported on Feb. 10 only 4000 tons have been obtained out of recent inquiries coming from different countries, this tonnage having been booked by the Providence works. Competition for one 6000-ton lot for Manchuria seems to be limited to America and Germany.

The Belgian state railway is in the market for 285 tons of merchant bars

Franc—$0.083

and shapes and the navy is asking for tenders on two steel vessels.

The economic agreement between Belgium and Luxemburg which was ratified by the Belgian parliament on Feb. 2 by a vote of 136 to 4 was strongly opposed by the more important Belgian steel producers. The government points out that this agreement may eventually include France, in which case a strong selling syndicate for exports would result. The government has promised that all necessary precautions will be taken to prevent Germany from dumping her products onto the Belgian market through Luxemburg.

The Comptoir des Acieries, Belgian steel selling syndicate, has not yet been reorganized. Two of the most important participants, Ougree-Marihaye and Cockerill have stipulated the amount of tonnage which should be allotted to them but the other mills interested contend that the two firms would absorb the greater portion of the orders. These differences probably could be overcome but one large producer is opposed to any agreement, and this attitude if adhered to may prevent the reconstitution of the syndicate.

Owing to limited production pig iron prices remain firm notwithstanding the lack of demand. The same may be said with reference to semifinished product prices at this time. A few inquiries for beams and angles have been reported, a small percentage of which have resulted in orders. Heavy beams have been quoted at 370 francs ($30.70) f.o.b. Antwerp without attracting a buyer. The Orient is still buying, but another slight drop in sterling will close the door to Belgian steel.

In the plate and sheet department the demand has fallen off but order books are well filled. Price concessions are being made on export business.

The situation as regards thin sheets is slightly better than last week as the mills are now offering prompt delivery.

Steel castings have been offered to one of the state railways at 15 per cent under cost to insure continuous operation of the foundries.

Attends English Banquet

London, March 2.—At the annual dinner of the Manchester and District Ironfounders Employers association, recently, the response to the toast of the visitors was made by Franklin G. Smith, president of the Osborn Mfg. Co., Cleveland, in his capacity as vice president of the American Foundry Equipment Manufacturers association. The toast was proposed by W. B. Richardson. Oliver Stubbs, president of the Manchester and District Ironfounders Employers association and also of the Institution of British Foundrymen, occupied the chair.

Coal Strike Considered Certain

Administration Firm in Its Belief That Miners and Operators Cannot Compromise at This Time—Secretary Hoover Leaves on Western Trip—Industry Stocked for Two Months—Much Good Expected To Develop from Walkout

WASHINGTON, March 14.—Secretary of Commerce Hoover's departure last Friday night on a western business trip that will keep him from Washington at least until the first week of April is taken to confirm the belief that unless Secretary of Labor Davis is able to draw bituminous coal operators and miners into a conference the administration will let the threatened stoppage in the bituminous coal fields on April 1 come to a reality. The possibility that Attorney General Daugherty may go into court and tie up the funds of the mine workers appears remote at this time. That the President would initiate any arbitration proceedings without the personal assistance of Secretary Hoover is doubtful. The outlook today, therefore, remains unchanged; it would seem that the administration will stand firm on its belief that no settlement is possible until the miners have gone through the motions of a strike, and provided the strike is not prolonged and a wage reduction results, no harm and much good may come.

While some industries notably public utilities, do not appear adequately supplied with fuel, the department of commerce and the geological survey report stocks that will maintain commerce and industry for some time, with the aid of the nonunion production. The March 1 survey of stocks will show more than 63,000,000 tons of bituminous coal stocked, it is understood. This is equivalent to the stocks at the end of the war and at the present rate of demand will be adequate for about 65 days. On Jan. 1 the stocks of 47,000,000 tons were held sufficient for 41 days' operations. The output of bituminous coal mines in the week March 4,— the latest available,— was 10,536,000 tons which is 2,600,000 tons short of the maximum production reached just prior to the 1919 strike. For the year to date production of bituminous coal has totaled 391,945,000 net tons, as against 496,639,000 in the corresponding period of 1921. With the railroads well supplied and industry able to continue present operations practically two months without further receipts and milder weather assured, fears of great hardship from coal shortage are not entertained.

Secretary Davis has made it plain that in his effort to bring the operators and mine workers together he is not seeking to place a government program before the conference but merely is endeavoring to carry out contractural relations entered into by operators and mine workers in 1920. So far the government has carefully refrained from any statement relative to wages, although officials recognize the necessity of liquidation of wages in the coal industry. The conference tomorrow between the anthracite operators and miners may give Secretary Davis his cue for the proposed bituminous coal conference.

Decision in Cost Case Affects Census

WASHINGTON, March 14.—If the Supreme Court of the United States upholds the principle of Justice Jennings Bailey, of the District of Columbia supreme court, that the production of steel is intrastate commerce and consequently congress does not have the power to obtain information concerning it, then manufacturers not not supply the census bureau of the department of commerce with production statistics and the way has been opened to a crippling of the census bureau's activities. This is the belief of members of the federal trade commission upon a study of Justice Bailey's decree in the Claire Furnace case whereby he enjoined the commission permanently from seeking production cost reports from iron, steel and coke producers.

The contention of the trade commission has been, according to the members of the commission, that it was merely seeking information through the medium of the questionnaires, and that regulation of the industry was not the end of the proposed inquiry. The commission's attitude is that congress has the power to regulate interstate commerce and that congress has the inherent right to obtain the information upon which it may subsequently legislate. The commission holds that while production in itself may be wholly intrastate, yet it is but an incident to the interstate commerce in the finished product.

Justice Bailey's decision, however, is conclusive on the point that production of steel is an intrastate—not an interstate—matter and hence falls outside the domain of congress. In reaching this conclusioin he denied the similarity, pointed out by the trade commission, to cases wherein the interstate commerce commission obtains reports on intrastate business of interstate carriers because the former cannot be properly segregated from the latter. On the basis of the Bailey decree, as members of the commission see it, any manufacturer may refuse the census bureau statistics concerning his production and thereby wholly ruin the service of the bureau to industry. In other departments of the federal government the application would be similar.

Confident, however, that the higher court will overturn the decree, the trade commission is preparing to carry the Claire Furnace case up to the appellate court of the District of Columbia. From the appellate court the case will go direct to the Supreme Court of the United States regardless of which side wins on the first appeal. In the appellate court the case will be argued before three justices. Meanwhile the commission is sidetracking the Maynard Coal case, as the Claire Furnace action, in which 22 iron, steel and coke producers are parties, embraces all of the theory of cost reporting.

The decision in the lower court, it is understood, in no way affects the attitude of the commission toward the cost figures it had procured up to the time it terminated its cost reporting campaign. The first questionnaires went forth to producers for January, 1920. In June of that year the producers enjoined the commission. Then the commission put cost reporting on a voluntary basis, and this was abandoned after figures for July, 1920, were in. Practically all of the steel costs the commission possesses were submitted by the United States Steel Corp. These figures were never published because so few producers other than the corporation were embraced that any only the corporation would be concerned.

Ore Rate Cut To Be 20 Per Cent

New Tariffs Reducing Charge for Haulage from Lower Lake Ports to Interior Furnaces Expected To Be Filed April 15—Buffalo Interests Again To Protest—General Hearing Concluded—Steel Products May Be Excluded

WASHINGTON, March 14.—Tariffs reducing the freight rates on ex-lake iron ore 20 per cent on April 15 are expected to be filed with the interstate commerce commission Thursday by the carriers in the eastern district. The definite statement that the reduction is to be 20 per cent and not 14 per cent as believed has been made by the carriers to counsel for the Buffalo interests, who have successfully opposed a lowering of the ore rates to the interior blast furnaces without a compensatory easing of the coal and coke rates to the lakefront.

The new ex-lake ore tariffs will be contested by the Buffalo interests and a request made for their suspension. Such a step has already been taken by the Buffalo interests in the case of the new station-to-station ore tariffs, reducing the rates 28½ per cent in eastern territory on April 1.

Why the ex-lake reduction is to be 20 per cent instead of 14, which would have wiped out half of the August, 1920, rate advance, has not been stated, but general order No. 28, increasing rates on June 15, 1918, is believed to have been a factor in the decision. General order No. 28 added 30 cents a ton to the station-to-station rates on ore in eastern territory, increased the rates on ore from the upper lake mines o the upper lake ports, but did not raise ex-lake ore rates. By reducing ex-lake rates 20 per cent at this time and the station-to-station rates 28½ per cent, it is pointed out that the ex-lake rates still will be at a lower level, relatively prior to general order No. 28. A 20 per cent reduction in ore would reduce the cost of iron ore approximately 25 cents a ton to the interior furnaces, or about 50 cents a ton of pig iron.

The action of the carriers in filing iron ore tariffs at this time is believed to rule ore out as a factor in any rate decreases the commerce commission may choose to make as the result of its general rate investigation, which ended last Saturday. The rates from the mines to the upper lake docks are under fire in the Adriatic Mining Co. case, thereby eliminating them. The attitude of the commission is such as to discourage any hopes that a general percentage reduction will be made, and there are grave doubts whether class rates will be touched, thereby excluding rates on steel products. The commerce commission has in no way officially indicated its stand, but the general opinion here is that little will be done other than a reduction in coal and coke, with 15 per cent as the highest estimate of the paring to be done on fuel.

Speaking for the Lackawanna Steel Co., Donner Steel Co., Wickwire-Spencer Steel Corp., Rogers-Brown Iron Co., Hanna Furnace Co., and the Donner Union Coke Corp., Francis B. James, of Washington, argued before the full commission last week that if a particular commodity is to be singled out by the commission for a reduction in rates this commodity shoud be coal.

Corporation's Arguments

Chares S. Belsterling, attorney for the United States Steel Corp. and representing substantially all of the iron and steel industry save that centering at Buffalo, urged the commission to take all of the August, 1920, rate advance off iron ore and limestone, to provide special treatment for steel products, now moving as fifth class, and to give "very serious" consideration to the rates on coal. For the New Jersey iron ore interests which he also represented, Mr. Belstering asked that these eastern ores be put on a parity with import ore. He denied categorically that Pitts-

"No commodity is transported in interstate commerce in which the freight rate is a greater factor in the ultimate price than steel," declared Mr. Belsterling." For every ton of steel produced six to seven tons of raw materials must be hauled into the plant. There is not lack of buying power on the part of the public; it merely is unwilling to buy at present prices. In the steel industry everything has been liquidated except transportation. Today's prices are rock-bottom. The commerce commission is not responsible, by any act or omission, for the present depression in the industry, but this unfortunate situation is being continued unwarrantedly and uneconomically by the present rates on finished steel and the related raw materials."

The fifth class rate on structural steel from Pittsburgh to New York today makes the carload charge $400 per car, Mr. Belsterling pointed out. Eastern Pennsylvania blast furnaces with their ore mines in New Jersey now must pay $2 per ton for a haul of 75 miles. Meanwhile, import ore is coming into eastern Pennsylvania at $1 per ton from the seaboard, a rate the carriers have refused to accord to domestic ore.

F. L. Ballard, making the final argument for 16 interests operating 54 blast furnaces in eastern Pennsylvania, members of the Eastern Pig Iron association, told the commission that the freight rate on raw materials to these eastern Pennsylvania furnaces averages $13.01 per ton of pig iron. With the market at around $20, the resulting margin of approximately $7 is insufficient to purchase the raw materials, let alone provide overhead and profit, he maintained. The pig iron that is selling in the East at $20 costs a minimum of $24 to produce, he asserted, while import pig iron has been offered at less than $20. The 3,500,000 tons of pig iron produced by these furnaces in 1920 provided the carriers with revenue from some 12,500,000 tons of inbound freight. The 1,350,000 tons of pig iron turned out in 1921 resulted from only 4,800,000 tons of inbound material, bearing out the contention that the rates are more than the traffic will bear.

Coal freight rates should be reduced to the bottom, and the benefits that will follow will depend upon the depth of the cut and the promptness with which it is made, were the outstanding points of the final argument of Rush C. Butler, counsel for the National Coal association. Pointing to the demand within the iron and steel industry for cheaper fuel, Mr. Buter listed John A. Topping, Republic Iron & Steel Co.; F. A. Ogden, Jones & Laughlin Steel Co.; L. C. Bihler, Carnegie Steel Co.; H. C. Crawford, Cambria Steel Co.; W. A. Barrows Jr., Eastern Pig Iron association; Robert Hula, Steel & Tube Co. of America; J. M. Gross, Bethlehem Steel Co., and others in the industry as advocating reduced coal freight rates.

In closing the case for the carriers, W. S. Bronson, Richmond, Va., argued that reduction in coal and coke would lower manufacturing costs in general so slightly that the saving woud not be passed along to the ultimate consumer. A 10 per cent reduction in bituminous coal would lower iron and steel production costs 64/100 of 1 per cent, he told the commission. Henry W. Bikle, counsel for the Pennsylvania railroad, pointed out that any reduction under 10 per cent woud not be felt, and that a general 10 per cent cut would cost the carriers $40,000,000, an impossible sum at this time. The general expectation is that the commerce commission will be ready with a decision about April 1.

Exchanges, Wheat in Reaction

Sterling Falls 15 Cents Below Recent High Point—Stock Market Continues To Show Firm Undertone Indicating Faith in Reality of Trade Improvement—U. S. Warns Europe To Get Down to Brass Tacks

BY JOHN [illegible] NCIAL EDITOR

THE past week has witnessed sharp reactions in foreign exchanges and in wheat. Sterling has dropped nearly 15 cents and wheat almost 18 cents below the recent record high points. At the same time the stock market has continued to display underlying strength. Some of the original impetus for the advance in stocks was derived from the phenomenal rise of exchange rates and wheat values. Since then, however, the foundations under the share market have been strengthened by the manifest improvement in trade conditions. Apparently people who buy and sell stocks do not believe that the business outlook has been seriously impaired as yet by the recessions in foreign exchanges and farm products. Both are still substantially above the low levels of last year. The stock market constantly is seeking to discount the future state of business and of industrial profits. At present business remains poor in many lines. Important gains have been made and every reliable sign points to further recovery with the advent of spring. This is the view which is sustaining stock values now.

The fact remains, however, that the degree and extent of the revival will depend largely upon the swing of the economic pendulum for the farmers and for Europe. Between these two factors there is close sympathy. This is evidenced by the concurrent movements of sterling and wheat. The advance of sterling last fall was followed by higher wheat prices and the recent slump in the pound was accompanied by a similar movement in wheat.

This is true because wheat and other important farm products are sold in a world market which centers in England. Europe is the great consuming group of the world's food products and raw materials. Prosperity of the American farmer depends upon the ability of Europe to buy. Events in recent months have clearly shown that the prosperity of the American business is profoundly affected by the condition of the farmers.

That is why everyone is interested in the trend of exchange rates and of farm prices. The recent declines have indicated the grave problems and difficulties which remain to be solved and surmounted before world economic recovery returns. Sterling has fallen largely because of selling by speculators who pushed the rate higher than conditions warranted. Other adverse considerations have been the Indian and South African troubles, disillusionment regarding the purposes and probable achievements of the Genoa conference, the growing weakness of German marks, and the senate fight on the Washington arms conference treaties. This government's refusal to participate at Genoa was not a notice of lack of interest in European economic problems or unwillingness to help in their solution. Since the American note, the meeting stands exposed as a European political maneuver on Russian affairs. Secretary Hughes has made it plain that until Europe gets down to "brass tacks" and grapples with the real problems which must be met and solved before stability is possible, this country will remain aloof. To extend aid under present conditions would be time and energy wasted. European nations must allay their suspicions and fears, reduce their huge armies, balance their budgets, and put reparations upon a feasible working basis. Important economic progress has already been made by Europe. If the advise of this government is heeded, even mildly, further improvement may be expected.

Speculative selling has been a factor in depressing wheat values. The decline has been a blessing in disguise in that it checked over-inflation of prices. This would be as harmful as over-deflation in these times of restricted purchasing power. The one curtails the buying power of the farmer and the other that of food consumers. The farmers will be most benefited by prices which correct the disparity between what they have to sell and what they buy. In the meantime the government's report of farm crop holdings reveal stocks much less than last year and indicate a good demand at fair prices for the remainder of the season. Based on March 1 farm stocks of grain the rise in prices has enriched the farmer by $500,000,000.

The Barometer of Business

WEEKLY COMPARISON

	Last Week	Week Before	One Month Ago	One Year Ago	1913
Business failures	521	629	581	293	300
Cash ratio Federal Reserve system, per cent.	77.8	76.7	76.1	50.8	....
Loan rate, prime discounts, 4-6 months, New York, per cent..	4¼-5	4¼-5	4¼-5	7½-7¾	5½-6
Bank clearings (U. S.) (000 omitted)	$6,536,623	$7,344,706	$6,112,510	$6,537,682	$3,500,000
Average 20 industrial shares (N. Y.)	$83.67	$83.06	$79.46	$70.66	$79.75
Average 40 bonds	$77.50	$77.40	$76.88	$69.50	$93.00
Car loading (week ended Feb. 25)	735,286	786,924	743,728	659,642	†737,442

MONTHLY COMPARISON

	February	One Month Before	One Year Ago	1913
Building awards 27 states.	$177,365,000	$166,320,000	$102,427,000	*$71,450,000
Business failures:				
Number	3331	2723	1641	*1336
Liabilities	$72,608,383	$73,795,790	$60,852,444	*$22,723,000
Excess of exports	$63,000,000	$59,100,000	$445,925,776	*$54,406,000
Excess of gold imports	$25,737,000	$28,734,730	$30,908,987	†$630,716
Bureau of Labor Wholesale Price Index	148	149	177	100
Bradstreet's Index of Wholesale Prices	125	123.2	128.8	100
Economist's Index of British Prices	4259	4284	5176	2732
National Industrial Conference board's Cost of Living Index	157.7	161.4	176.3	100
New incorporations	$591,404,300	$843,652,900	$654,375,800	$172,301,000
Railroad net earnings	x$50,000,000	$67,000,000	$10,226,000	*$59,900,000

*Monthly average. †Monthly average export excess. ‡1918. x December ‖January.

FOREIGN EXCHANGE (Demand)

	Normal	Last Week (closed)	Week Before	One Month Ago	One Year Ago
Sterling	$4.86	$4.35	$4.40	$4.33	.90
Francs	19.3c	8.91c	9.11c	8.54c	7.08c
Lira	19.3c	5.02c	5.26c	4.87	3.69c
Marks	23.8c	0.39c	0.39c	0.[illegible]c	1.61c

The Trend of Business

March 16, 1922

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION—Impetus of [illegible] activities growing more perceptible as season advances. Extent of recovery depends upon European economic stability and farmer purchasing ability, both of which are more favorable than last autumn despite recent reactions in wheat and foreign exchange rates.

INDUSTRIAL ACTIVITY—February outputs of pig iron and steel ingots at best rate in a year. Ingot production near 60 per cent of normal against 27 per cent last July. Steel corporation loss in orders of 100,000 tons due to heavier shipments on contracts. Coal output gains.

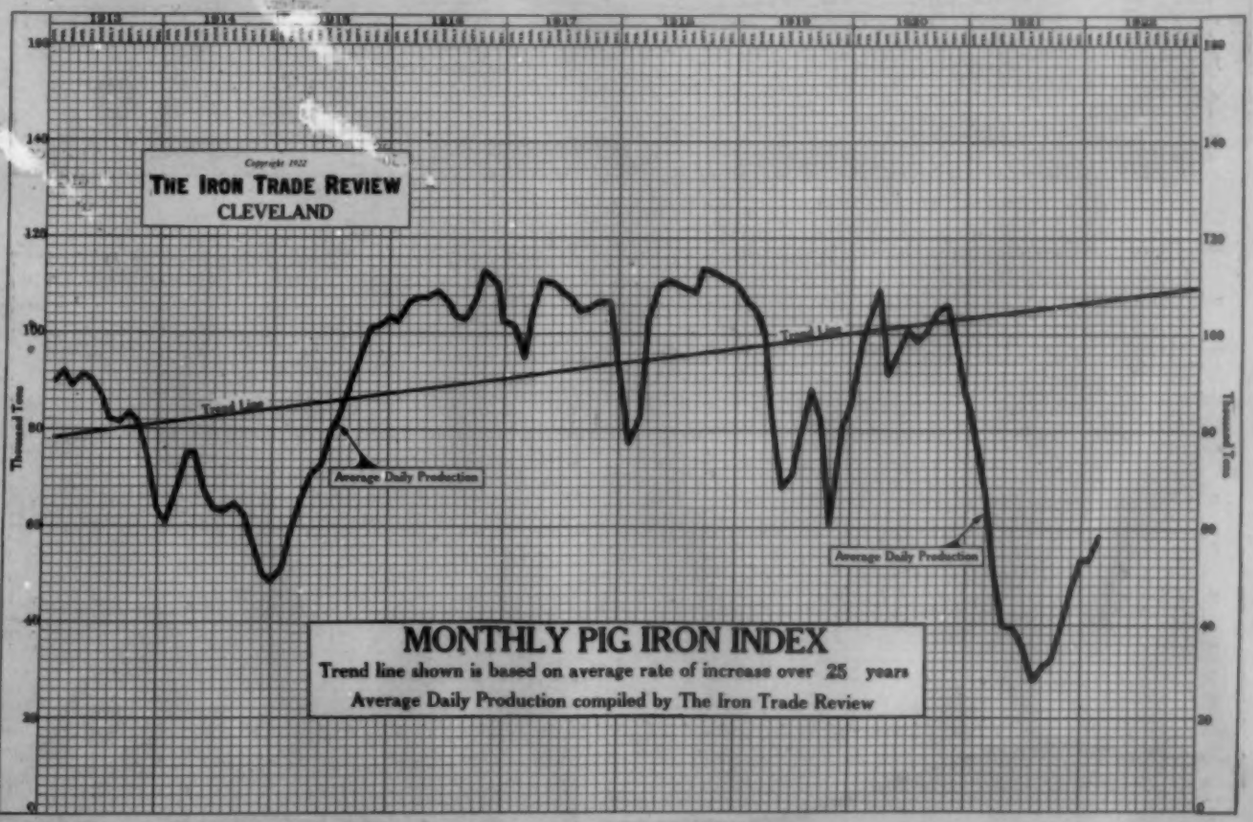
TRAFFIC—Car loadings for week Feb. 25 lowest of any week in the month, due to Washington's birthday. Tops same week of 1921 by 75,644 cars. Gains over 1921 chiefly in coal and merchandise.

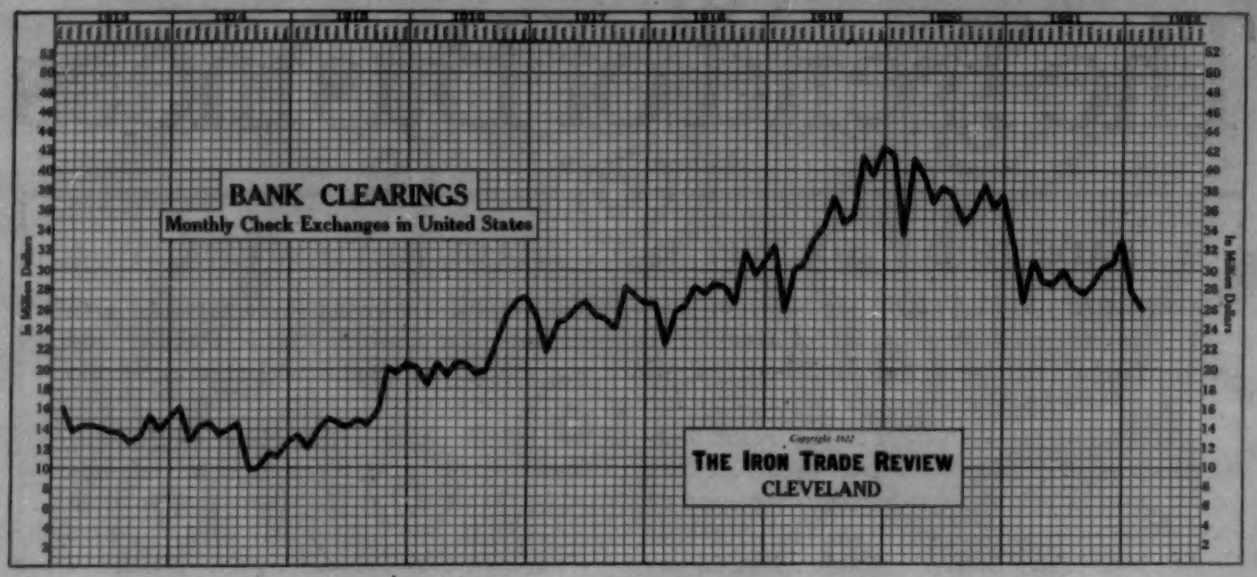
CREDIT CONDITIONS—Federal Reserve ratio advanced slightly last week. Bank credit in abundance and growing cheaper. February bank clearings less than January but higher than average.

BUILDING CONSTRUCTION — Building awards in 27 states in square feet during February 83 per cent greater than year before. Industrial awards gain 35 per cent over February, 1921. Dwellings larger than last year but less than in January. Some strikes impede building.

SECURITY PRICES—Continued strength of stocks and bonds reflects improving domestic industrial conditions. 50 leading stocks highest since 1920 and 40 bonds highest since 1919.

COMMODITY PRICES—March 1 index numbers of wholesale prices advance sharply, due to higher farm products. Business failures show declining tendency as prices advance.




BANK CLEARINGS
Monthly Check Exchanges in United States
In Million Dollars
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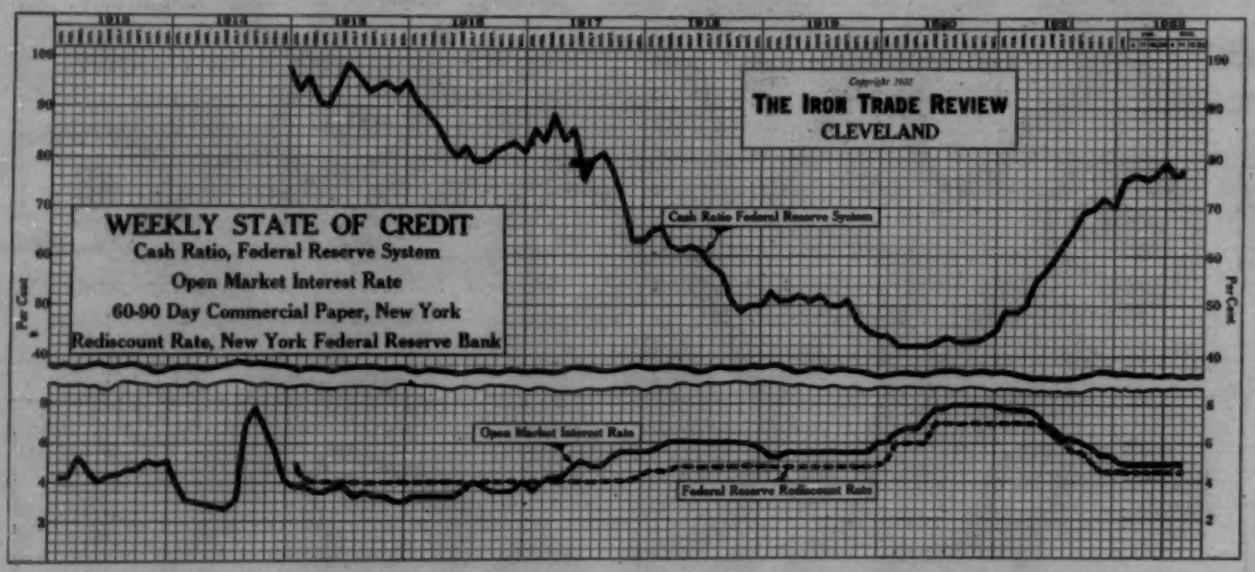
WEEKLY STATE OF CREDIT
Cash Ratio, Federal Reserve System
Open Market Interest Rate
60-90 Day Commercial Paper, New York
Rediscount Rate, New York Federal Reserve Bank
Per Cent
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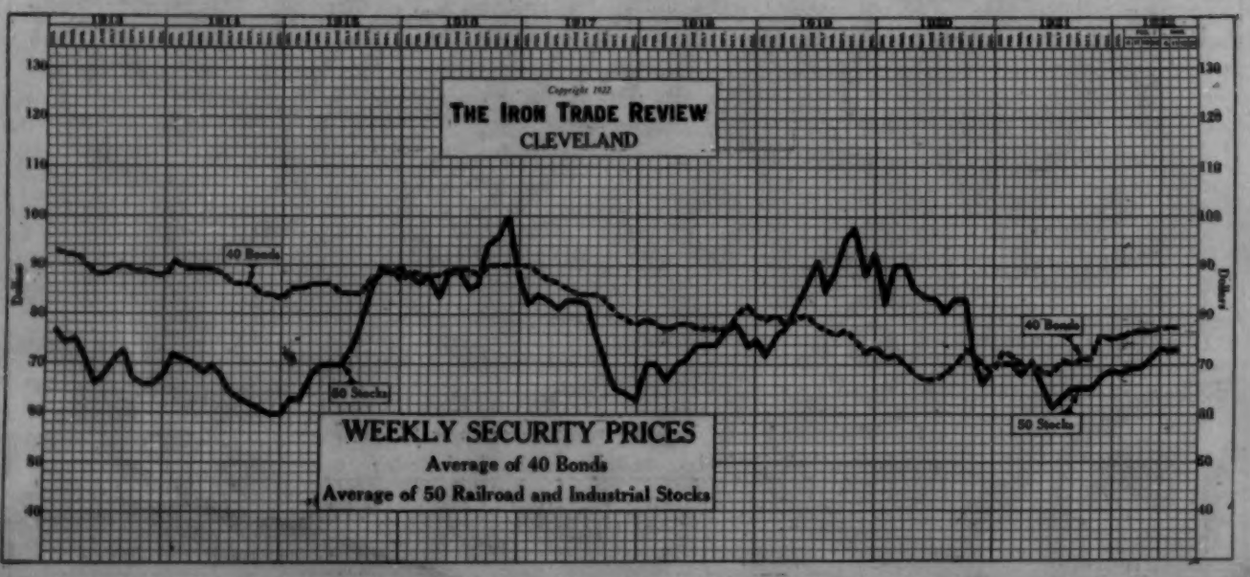
Cash Ratio Federal Reserve System
Open Market Interest Rate
Federal Reserve Rediscount Rate


WEEKLY SECURITY PRICES
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks
Dollars
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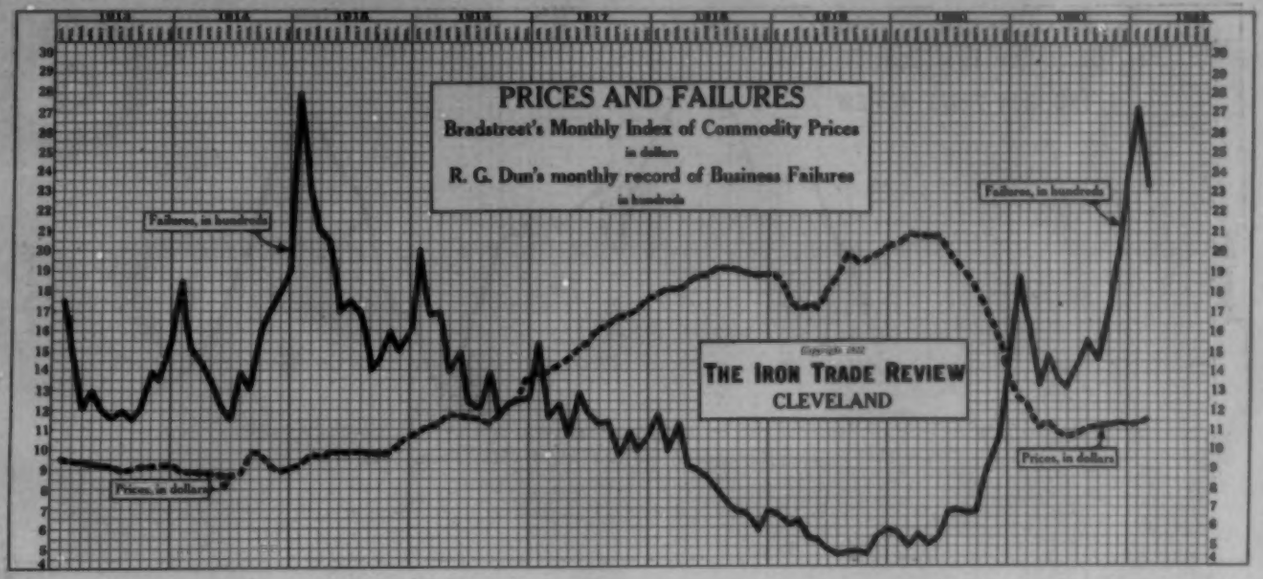
40 Bonds
50 Stocks
40 Bonds
50 Stocks


PRICES AND FAILURES
Bradstreet's Monthly Index of Commodity Prices
in dollars
R. G. Dun's monthly record of Business Failures
in hundreds
Failures, in hundreds
Prices, in dollars
Failures, in hundreds
Prices, in dollars
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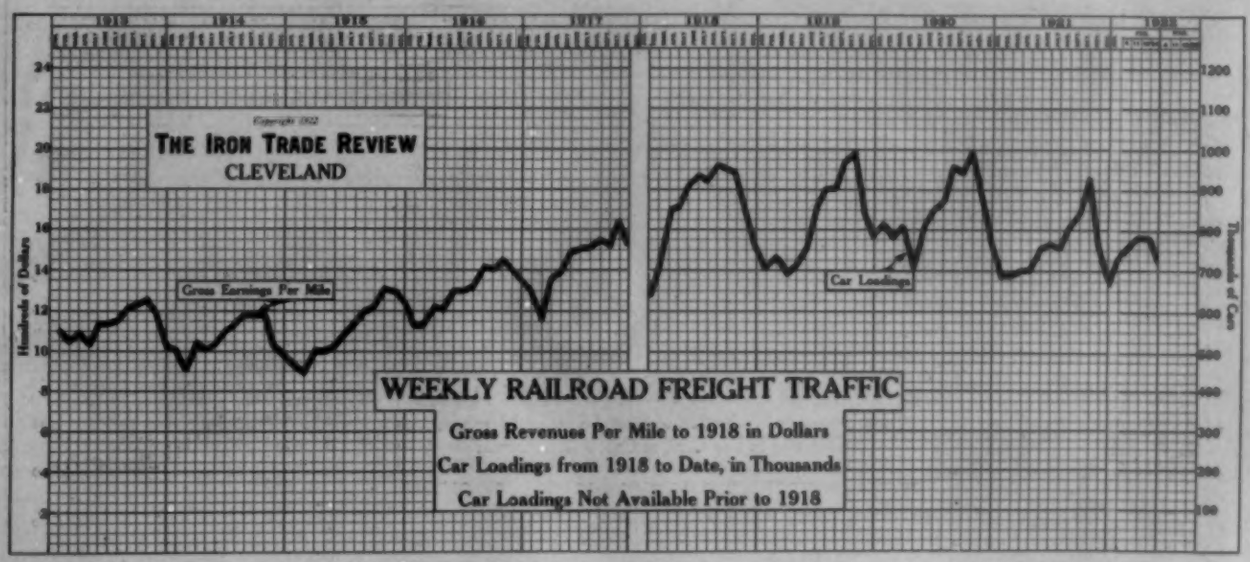
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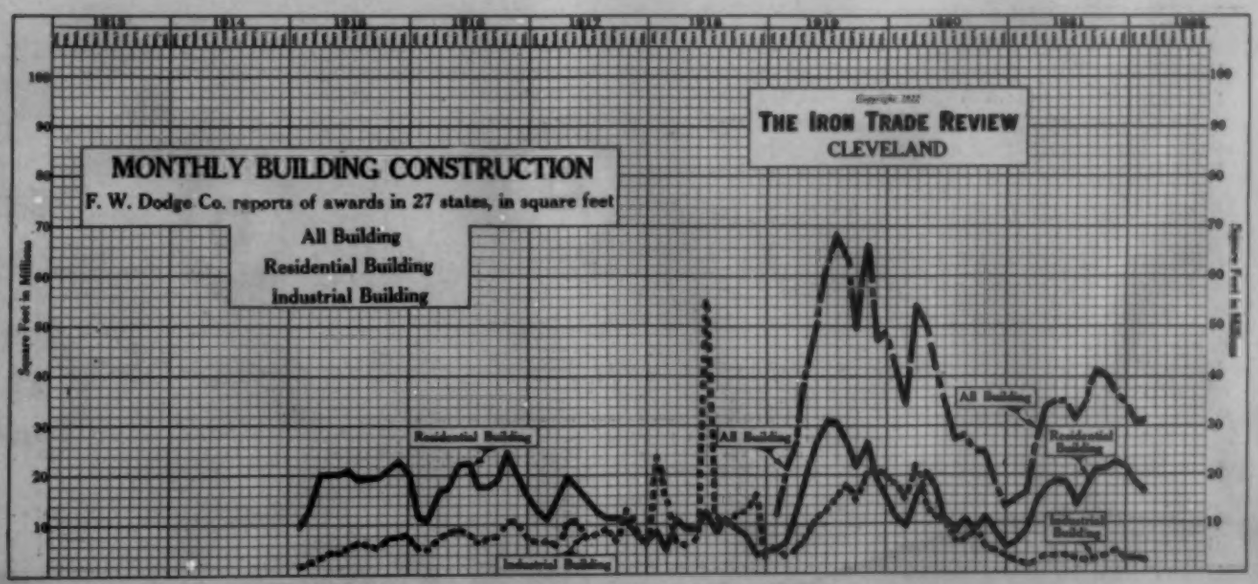
Gross Earnings Per Mile
Car Loadings
Hundreds of Dollars
Thousands of Cars
WEEKLY RAILROAD FREIGHT TRAFFIC
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918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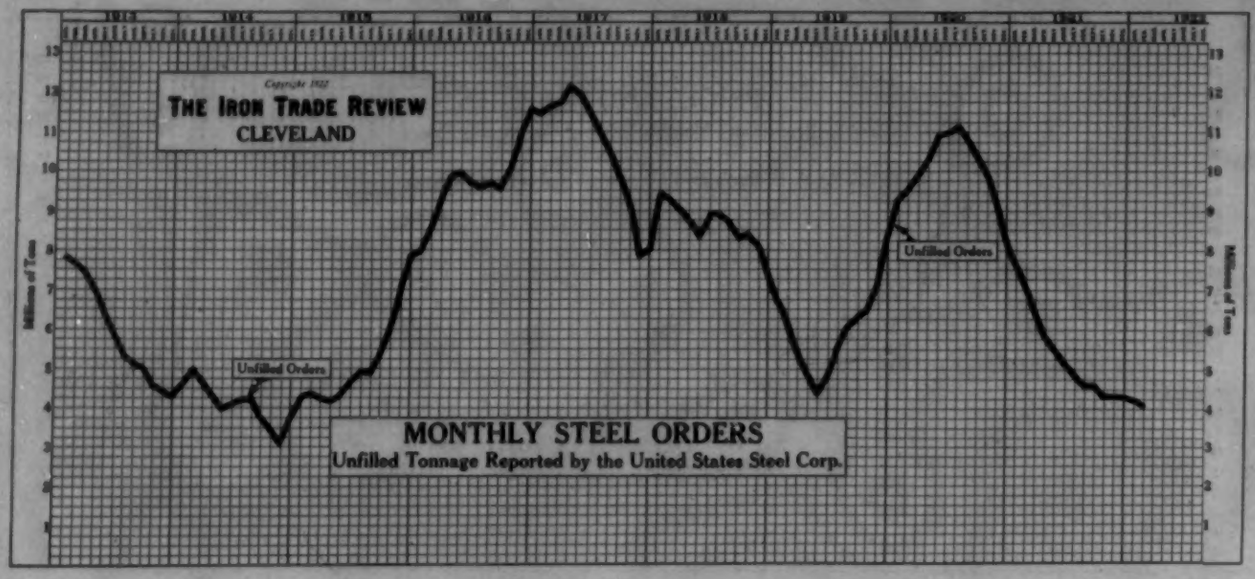
MONTHLY BUILDING CONSTRUCTION
F. W. Dodge Co. reports of awards in 27 states, in square feet
All Building
Residential Building
Industrial Building
Square Feet in Millions
Residential Building
Industrial Building
All Building
All Building
Residential Building
Industrial Building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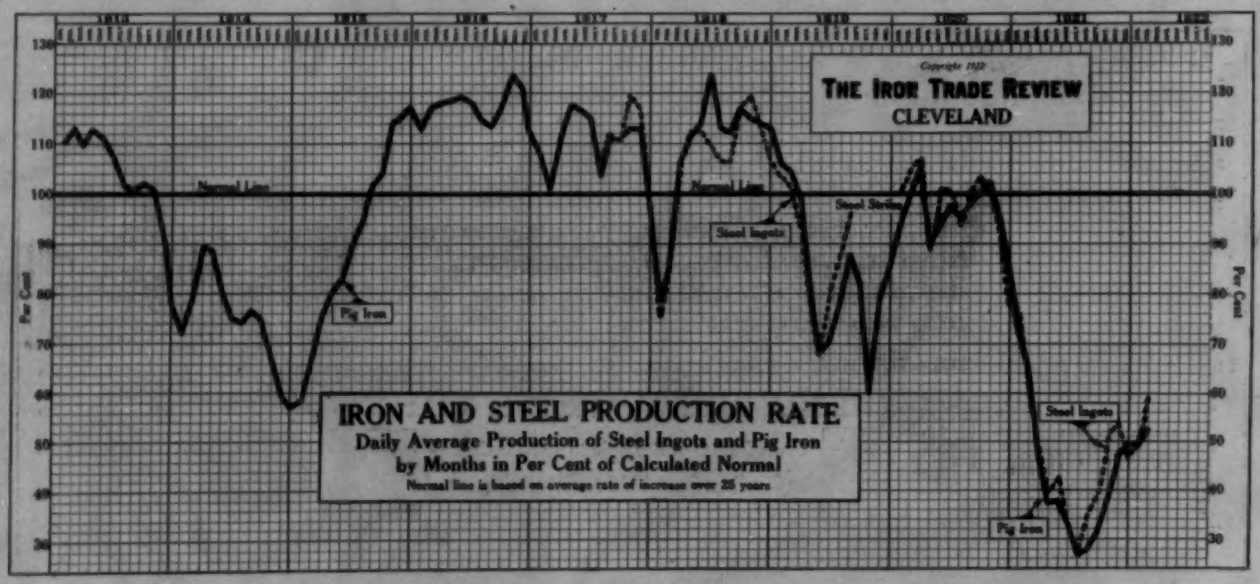
Unfilled Orders
Unfilled Orders
Millions of Tons
Millions of Tons
MONTHLY STEEL ORDERS
Unfilled Tonnage Reported by the United States Steel Corp.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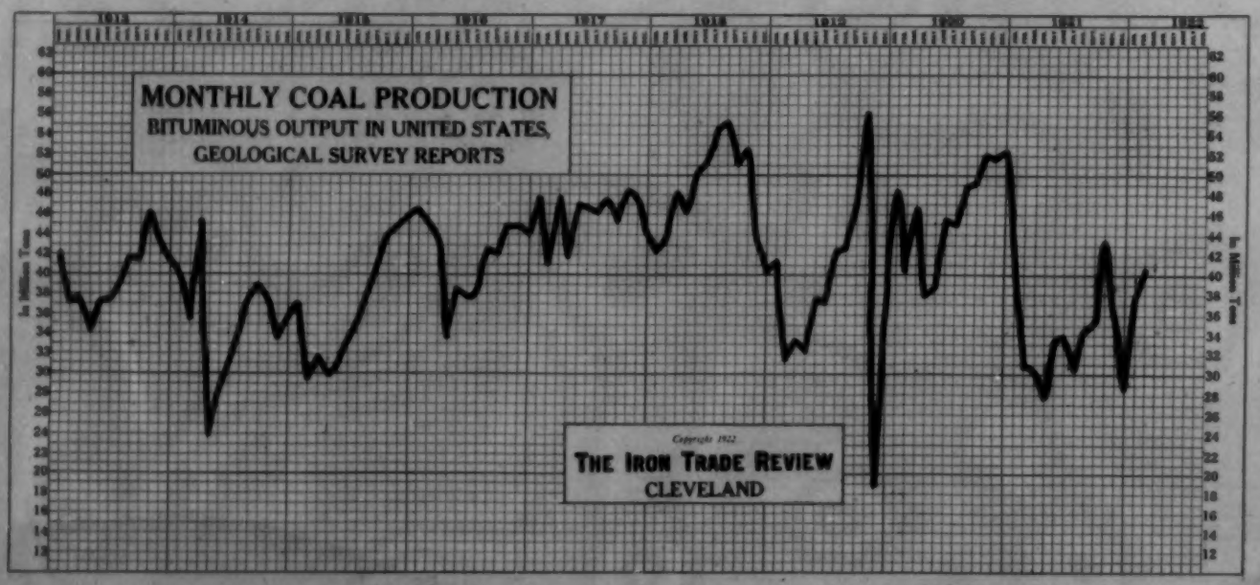
Normal Line
Normal Line
Steel Ingots
Steel Ingots
Pig Iron
Pig Iron
Per Cent
Per Cent
IRON AND STEEL PRODUCTION RATE
Daily Average Production of Steel Ingots and Pig Iron
by Months in Per Cent of Calculated Normal
Normal line is based on average rate of increase over 25 years


MONTHLY COAL PRODUCTION
BITUMINOUS OUTPUT IN UNITED STATES,
GEOLOGICAL SURVEY REPORTS
In Million Tons
In Million Tons
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CLEVELAND

May Amortize War Equipment

Revenue Act Permits Amortization of Facilities Erected on or After April 6, 1917 and Used for War Purposes—Buildings Included—Residual Value Taken Into Account—Computation Is Relatively Simple

BY T. W. DINLOCKER

UNDER the federal tax law amortization is permitted in case buildings, machinery, equipment, or other facilities were constructed, erected, installed, or acquired on or after April 6, 1917, for the production of articles contributing to the prosecution of the war. Reference to the revenue act of 1918 makes it clear that the differentiation between those industries to which amortization shall or shall not apply is as between essentials and non-essentials.

The fact that any industry was allowed to operate under priority is evidence sufficient of its essential character. It is not necessary that the product was sold to the government, nor even to government contractors, to bring the manufacturer of essentials within the rule.

The first question that the law, both present and former, requires the taxpayer to put to himself, in determining whether he is entitled to claim amortization, is: "Did I, on or after April 6, 1917 (the date war was declared), make any expenditures on buildings, machinery and equipment, or other facilities, that produced articles contributing to the prosecution of the war?"

He will have no doubt as to whether such expenditures were made, but may be uncertain as to whether they were for war purposes. If he used the added plant on work on a government contract, or subcontract, he is clearly entitled to amortization; if it was used to produce luxuries, such as fine lingerie for the wives of the new-rich, he is as certainly not entitled to it.

Some Doubt Exists

But between these two extremes there are many cases that involve real doubt. No hard and fast rule exists for definitely determining whether a given industry was in the "contributory" class. The treasury department has shown a broad and enlightened attitude in applying this test. Each case must, however, finally stand or fall on its own merits. If the taxpayer used his added plant, in whole or in part, in prosecuting—directly, or as a subcontractor, or supplier—any business included among the essential industries by the war industries board, he is justified in answering the question, put at the beginning of this paragraph, in the affirmative.

What Is Amortization?

In the accounting sense, as in the revenue law, it is a deduction which destroys book values representing plant or equipment used for the production of articles contributing to the prosecution of the war. If the useful value of that equipment has been entirely lost, the book value should be wiped out. If the value in use has not completely disappeared, but has been reduced, then the book value should be written down to the figure that will reflect only the fair value as a productive asset.

Amortizable property must have been provided between April 6, 1917, and Dec. 31, 1918, plus any 1919 changes which were irrevocably contracted for during that time, even though completed and paid for after Dec. 31, 1918. No property installed prior to April 6, 1917, is subject to amortization. If construction was commenced before that date, but completed after that date, only the part completed after that date can be amortized.

Under the regulations amortization is divided into two distinct classes, the first known as Class I, dealing entirely with buildings, machinery and equipment which have been already discarded or will be at a known date previous to March 3, 1924. The second, or Class II, deals with buildings, machinery and equipment which have and will undoubtedly continue to have a certain value in use to the taxpayer in his going business.

Class I amortization applies particularly to those who departed from their production of a standard product, took over essential work or intensified production of standard material and prepared for the same by the erection of buildings and the installation of machinery and equipment, most or all of which has no value in use to the company in its going business and is therefore discarded and amortized under Class I.

Class II amortization covers buildings, machinery and equipment which have a certain value in use to the taxpayer in his going business and probably, within reason, will continue to have.

The residual value, of course, under Class I consists of either salvage or scrap values. The scrap or salvage values during the war period were abnormally high even as all constructive material costs were high. With the end of the war these values are fast approaching the normal so that claims presented today or later under Class I or Class II, because of the position of the useful value, cannot but secure the maximum degree of amortization allowance.

The fact that no market exists today for many manufactured articles must be recognized and the advisability of scrapping carefully considered in view of the indeterminate time factor relative to disposal by sale or value in use, with the attendant deterioration, possibility of changed nature of product and the ability to buy machinery more suited for the particular requirements at a greatly reduced cost.

Buildings Classified Also

Another class covers buildings, machinery, and equipment which still have and probably will continue to have a certain value in use to the taxpayer in his going business. This is called "Class II Amortization." If the value of such property for sale is greater than its value in use to the taxpayer, the useful value must be disregarded, and allowance may be claimed only on the basis of the sales value. This is perfectly reasonable, as the taxpayer should sell property that is not worth as much to him in his business as its salvage value. If, on the other hand, its worth to him in his going business is more than its salvage value, but less than its original cost, then his claim for reasonable amortization is only this difference between its value in use and the original cost, and he cannot claim down to the salvage value.

In the consideration of amortization from a Class II or "useful value" stand-

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From an article published by the Industrial Cost association, New York. The author is assistant comptroller, S. K. F. Industries, Inc., New York.

point many cases come under observation which have to deal with plants which were entirely adequate before the entry of this country into the war but which expanded tremendously to meet the intensive demand. With the cessation of hostilities and the return to peacetime operations, the prewar plant is again entirely adequate for all possible demand for production. This fact can be easily proved as can the existence of no greater volume of business now than previous to the war; nor can this volume be increased materially, for the need cannot exist.

Disadvantage of War Cost

Even if a taxpayer can fully employ his prewar plant and its wartime additions under his normal postwar situation, he will be at a decided disadvantage with new competitors who can get the same size plant at a much smaller capital cost. There is no doubt that congress intended to permit the amortization to cover this financial factor of excess costs as well as the mere loss due to over-expansion of the physical plant. Unfortunately, the treasury has not up to the present time applied this method.

The treasury department's regulations of April 17, 1919, attempted to limit the allowance to 25 per cent of the cost price. But the law did not put any specific percentage as to the amount of claim, but said the allowance should be "reasonable". Any regulation that would limit the claim to 25 per cent when the loss was more than that would be contrary to the law. The department has attempted to preserve a margin of safety, and does not seem to grant in the "tentative allowance" all that the taxpayer may finally be entitled to.

The taxpayer has the privilege of fixing the amount to be deducted for amortization purposes, and as long as such amount is reasonable he cannot be required to make a guess as to what future values might be. On that ground, once his claim is filed within the statutory period ending March 15, 1922, either the taxpayer or the government may re-open it after tentative allowance, in the light of trustworthy information procurable, up to March 3, 1924. It the taxpayer retains the property and does not sell it, he does so in the hope of some profitable use at some future time, but if this hope does not materialize he is not bound by the prospective valuation which he may have put on the property at the time of its retention.

The commissioner may, before March 3, 1924, require an appraisal and a redetermination of the tax. If such appraisal indicates an unreasonably large claim, the taxpayer would be subject to penalties for understatement of tax. To prevent understatements the department has not been allowing as large sums as would seem reasonable in many cases. It may be that the courts will broaden the regulations to comply with the law.

Class I amortization is relatively simple to determine. This covers buildings, machinery and equipment that have been discarded or will be discarded at a known date. Class II, the more difficult of determination, covers property which still has and probably will continue to have a value in use in the going business, when the useful value is not to be taken at less than the salvage value. Salvage value was ruled to be the value ruling during the first part of 1919, but this value is abnormally high; latter interpretation and application of the law and regulations has become more reasonable and liberal.

It is not necessary for the taxpayer to actually wreck buildings or to scrap or sell equipment in order to obtain relief to the maximum degree of a Class I amortization. Buildings may be abandoned so far as productive activities are concerned, and the cost, less salvage value of the material that entered into construction of the building, can be claimed as amortization. By so doing, the taxpayer receives relief for such period during which the building is not necessary to the productive activities of the plant.

If, before March 3, 1924, that particular building is needed, it is merely a matter of restoring to the government the part of the replacement cost of the building which had been taken as amortization. This can be accomplished by filing with the government an affidavit to the effect that the building is not in use and will not be used without reporting such use to the government and making proper restoration. This naturally promotes the most efficient use of all the facilities remaining, and is consistent with the best shop practice. If the building is not suitably located, or is of a design which would not be used later, it remains discarded until torn down.

Machinery and equipment may be left in position and not put to use. It can be tagged as indicating it to be out of use or of no particular value, so far as the immediate future demand indicates. Such items must be reported to the department in due form, together with an affidavit that they have no value in use and will not be used without notifying the department and making the restoration of the percentage of the replacement value previously allowed as amortization of such items. The management is not required by the law to make wild guesses that may not be realized. Discarded equipment might be entirely superseded by new and more desirable machinery by the time that the discarded machinery could be used for production. When the old machinery would be sold and the transaction closed, the full proof of amortization should be made. The entire difference between the cost to the company and the sales realization would determine the amount to be returned to the taxpayer by the government, or restored to the government, as the case might be.

In many cases there is a partial use of equipment that would not have been provided had it not been for the war. In such case a determination must be made as to its value in use, compared to its salvage value, and the building or equipment amortized down to the larger figure of the two.

Article 186 of regulations 45 is very clear on the point that amortization claimed must be reflected in the books and accounts submitted to stockholders, and in credit statements made to banks. If written off the books, amortized capital will more likely be blotted out of all deluded hopes that it will some day be productive. This should help in readjustment. Retained as physical property, even at salvage value, dead equipment becomes a continuous burden. It takes money to maintain and shelter it. It creates continuous expense for taxes and insurance. Its idleness cost is increased through loss of interest on the salvage value that could be invested in securities producing a net revenue. Retained too long and in too great an amount, it leads to ruin, and its final liquidation takes place through bankruptcy.

Emphasizes Need of Fair Analysis of Coal

O. P. Hood, chief mechanical engineer of the United States bureau of mines read an interesting paper before the Purchasing Agents Association of New York recently, on the methods of taking a reliable coal analysis.

"An analysis of a sample that is not properly collected is useless," declared Mr. Hood. "Coal frequently is worth more per ton than either gold or iron ore and the same refinements in principle must be observed in sampling coal as in other sampling. Iron ore is all carefully sampled and priced according to analysis."

"A standardized method of coal sampling has therefore been adopted and

must be followed to obtain a just sample. It is worse than useless to make an analysis of an unfair sample. Much of the complaint about buying on an analysis basis hinges on the method of sampling. The analysis method should not be used unless one is prepared to undertake righteous sampling. A study of the theory of sampling soon shows that a relatively large gross sample, 1000 to 2000 pounds is necessary and that there should be crushing facilities to reduce the size of particles. Furthermore a cargo should be represented by several such samples, taken in equal small increments throughout the whole period of unloading."

The speaker told of the efforts of the bureau of mines to bring about a standard classification of coal grades backed up by a government guarantee of quality for the guidance of the buyer. He said that a comprehensive plan for bringing this about was provided in a bill introduced in congress but was not passed because of lack of funds that would be necessary for the work.

Studies Structure of Tungsten Steel

BY ALBERT M. PORTEVIN

ANNEALING followed by exceptionally slow cooling is a process offering a wide field for investigation. This treatment of steel affords a means of securing a general enlargement of the structural features, so as to allow of a closer scrutiny of details and peculiarities, but also leads to true states of equilibrium being obtained.

By adopting this mode of systematically investigating the special steels, the author has been able to effect not only the disappearance of obviously hard states, martensitic or austenitic, hitherto observed exclusively in certain chromium and manganese steels, but also has been able to establish the fact that certain structures which might have been regarded as being in equilibrium, are superseded by others. These by the seperation of constituents not hitherto described, represent, in the sequel, an even more advanced state of equilibrium.

Examples, in the case of certain tungsten and molybdenum steel, will be described. The author wishes to point out, however, in this connection that nickel steels, containing up to 30 per cent of nickel and 0.8 per cent of carbon, which have been studied by this method, undergo profound modifications in structure. Moreover the new structures thus created are complex, and their interpretation presents difficulties, owing to the uncertainty surrounding knowledge of the stable iron-nickel system.

Is Devoid of Pearlite

An investigation of the structural variations resulting from annealing tungsten steels and then cooling them slowly, has led to certain conclusions, in regard to alloys containing from 0.1 to 0.4 per cent of tungsten. The structure of these "normal" steels is described as consisting of ferrite associated with pearlite, or even as being devoid of pearlite.

After annealing at about 1300 degrees Cent. followed by a cooling extending over 75 hours, down to 200 degrees, Cent. the structure is altered completely. A network of light and dark areas is formed separating regions occupied by a constituent differing from any hitherto known. This is apparently a complex consisting of needles, and is found alike in steels with a carbon percentage as low as 0.1 and in steels with a tungsten percentage as high as 7.55. Examined under high magnification needles can plainly be seen, arranged similarly to those of the martensite of hardened steels. These needles can be colored by a solution of sodium picrate in soda. This characteristic, added to their abundance in steels with so low a carbon content, which prevents them being taken to be carbides, shows them to be a tungstide. The arrangement of the structure indicates they have separated gradually from a crystallized medium. The presence of the acicular complex ferrite plus tungstide in steels with 0.1 per cent of carbon and 5 per cent tungsten proves that this limit must be extended to low percentages of tungsten.

In addition to the foregoing there are to be observed in these steels, white areas of ferrite the proportions of which diminish as the carbon percentage increases, and a carbide either in visible particles more or less coalescent or forming part of a troostite readily stained by acid reagents.

Once obtained, this special acicular constituent persists even if these steels be subjected to fresh annealings at about 1000 degrees, Cent. On the other hand, by annealing at 1100 degrees Cent. and cooling for a period of 3½ hours, the carbide can be made to disappear and only ferrite and the acicular complex remains in steels low in carbon. The entire solubility curve of tungstide in the solid state must be extended in the direction of the low percentage of tungsten.

To sum up the foregoing it may be said in tungsten steels a structure comprising four constituents is encountered: A tungstitic ferrite, a tungsten carbide, a tungstitic troostite, and a new constituent which is a complex ferrite plus tungstide.

Molybdenum steels have been found annealed as previously described, a constituent presenting the same morphological characteristics and susceptibility to etching as the acicular complex just described in connection with tungsten steels. Instead, however, of occurring as it does in the steel containing 0.4 per cent of carbon and 5 per cent of tungsten, in masses regularly distributed and forming the interstitial packing between a network of carbon complex, this constituent is found in irregularly disseminated clusters in a ground mass readily colorable by acid reagents and hence more highly carburized. These clusters are, moreover, visible to the naked eye owing to the considerable enlargement of the scale of the structural arrangment, resulting from the slow cooling. The appearances are identical.

Four Compounds Present

Our knowledge relating to the equilibrium of the iron molybdenum system is confined actually to the hypothetical pseudo-binary diagram which allows of the existence of a compound *X*, which forms slowly, but increases with the temperature attained. On the other hand, results based on the analyses of the residues from the etching with hydrochloric acid, shown that four compounds were present, one of which was iron molybdite. The investigation, by chemical methods, of the constitution of alloys has, however, often proved fertile in putting forward compounds which have subsequently been found ot have no real existence. In these circumstances, it is not possible to draw definite conclusions as to the chemical nature of these acicular needles, as they may be either an iron-molybdenum, or an iron-carbon molybdenum compound. Whichever they may be, the similarity between these structures in tungsten and in molybdenum steels is of sufficient interest to record, the more so as the presence of these constituents indicates a state of equilibrium more stable than that previously encountered.

From a paper presented at the meeting of the Iron and Steel institute, Paris, Sept. 5 and 6, 1921.

Adds New Rolling Mill Equipment

Scottish Steelmaker Installs Modern Machinery in Transforming Plant from War to Peacetime Production—Merely Continues Expansion Program Started Years Ago—Careful Layout Results in Economy in Handling and Maximum Output

BY JOSEPH HORTON
British Correspondent of The Iron Trade Review

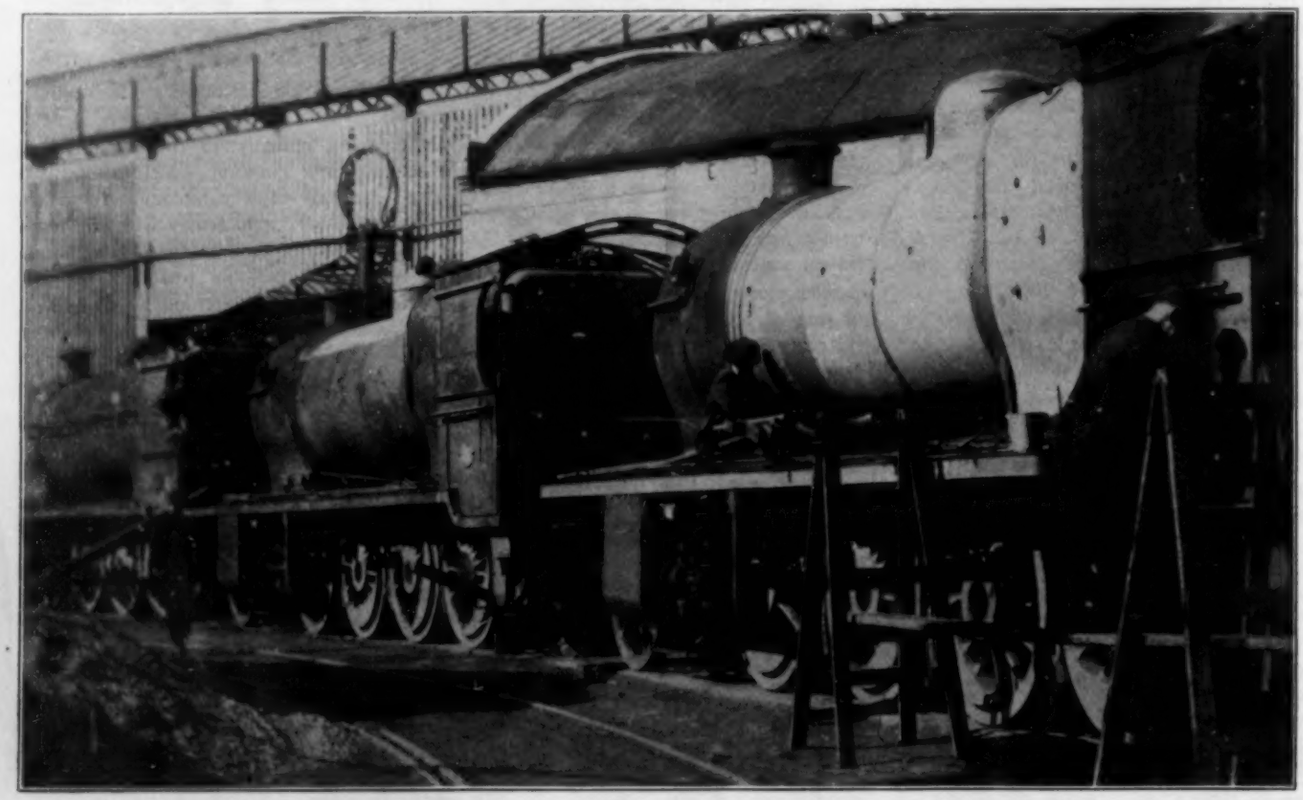
WILLIAM BEARDMORE & Co., Ltd., Glasgow, Scotland recently have made a number of important improvements to their plants, some of which are of especial engineering interest. These extensions have required a large outlay of capital and to obtain the necessary funds, the capitalization of the company was increased in 1920 from £3,000,000 to £8,000,000 by the issue of 5,000,000 new shares of preferred stock of a par value of £1 each.

The Beardmore company began with the taking over in 1835 of the Parkhead Forge, largely for the purpose of providing the necessary forgings for the machinery of the pioneer Cunard liners. There was a steady growth until 1860, when William Beardmore, the father of the present chairman of the company, was one of the forge masters. Eventually Mr. Beardmore became partner with his brother, the firm trading as W. & I. Beardmore. In 1886, the present chairman, Sir William Beardmore took over complete control. Since that time, the progress has been rapid. The firm owns Parkhead rolling mills, and steelworks at Glasgow, the naval construction works at Dalmuir, and the Mossend steelworks at Mossend, Lanarkshire. In addition William Beardmore & Co., Ltd., either own or hold important interests in numerous controlled or associated companies including the Glasgow Iron & Steel Co., Ltd.; Alley & MacLellan, Ltd., engineers and shipbuilders; the Dowson & Mason Gas Plant Co., Ltd.; Newton Mines, Ltd., and John Broadfoot & Sons, Ltd.

For many years past the Beardmore company has been turning out battleships for the navy, fitting them throughout with their armaments and gun equipments and every other auxiliary requisite. From the shipbuilding point of view, the place is completely selfcontained. Prior to the war, the engine works at Dalmuir alone covered 90 acres, and the Parkhead works 94 acres. Like so many large companies engaged in steel and armament production, this company during the war applied nearly the whole of its works to the production of war material. The change over to peace production necessitated important changes and among the new manufactures since added are locomotives, oil engines for marine and land purposes, and taxicabs.

The reconstruction of the Mossend steelworks since its original purchase has been carried through over a long term of years, the object being to bring them up to date and make them thoroughly modern and efficient. The question of layout was gone about systematically and thoroughly to secure the fullest economy in handling, while obtaining the largest possible output. One of the latest installations is a new 32-inch steel shape mill, of which some details are given later in this article.

The Beardmore shipbuilding yards at Dalmuir required a steady supply of



A VIEW TAKEN AT THE BEARDMORE LOCOMOTIVE WORKS, DALMUIR, SCOTLAND, SHOWING THREE LOCOMOTIVES BEING DISMANTLED AFTER STEAMING TEST FOR SHIPMENT OVERSEAS

steel plates and angles of all sizes and dimensions. At times, the Parkhead forge and rolling mills have been unable to deal with requirements. Mossend is now able to handle numerous outside contracts, in addition to meeting the requirements of the Dalmuir shipyard. The company claims to supply every part of a big engineering proposition, and the material for battleship contracts as well as merchant ships, locomotives or taxicabs.

Uses Time-Saving Devices

In steel shapes the Mossend plant has a weekly capacity of 4000 tons of finished material. The plant has been designed with a view of avoiding congestion and of obtaining quick delivery. Seven stocking bays, each having a 60-foot span, are served by 5-ton electric overhead cranes. The steel is loaded on three railway lines, while there is ample storage capacity in the event of unexpected delay in transport. A number of mechanical devices are employed for speedy loading.

The peculiar exigencies of railway transport, dock and shipping conditions require special handling to insure reasonably prompt consignments. British railway service has suffered from the enervating effects of experiments in nationalization. After inspection methods in operation, both on the continent and in America, a new innovation in stocking and loading was introduced. In the bar mill two separate sets of cooling beds and delivery conveyors were laid down, one set for cooling purposes and the other for sorting and stacking the bars ready for shipment. The hot beds are worked in series. While one is being filled, the other is emptied. Two sets of skidders are used on each hot-bed. When filling the hot-bed one set of skidders is used for pushing the bars off the live rollers on to the bed, and the other for placing the bars in succession on the bed. Sometimes the skidders are used for the combined operation of clawing the bars from the incoming live rollers, and conveying them across the bank to their proper position. It is possible to handle simultaneously, on each bed, bars up to 60 feet in length. As the railways restrict sections to 60 feet, these lengths are seldom exceeded, but provision has been made for handling bars up to 120 feet. Extra long bars are always rolled after the stopping for meals, when advantage is taken of the suspension of rolling operations to empty the beds in readiness for the long sections.

How Hot Beds Are Filled

Two standard methods of filling the bed are possible, the selection of the proper one depending upon the section being rolled. In the one case as the bar comes from the saw, the "push-on" skidders engage and push it clear of the live rollers on to the bed. The skid then returns, engages the next bar, and places it close to the previous one, leaving just sufficient space for the trigger of the "pull-off" skid to rise between the bars. In the second method, the "pull-off" skid engages the bar placed on the bed and carries it to the extreme edge. It is possible to place the bars without their mounting each other. Usually four bays are in continuous operation, two for making up the loads, while in the other two, the steel is being loaded into railway cars. The present railway restrictions upon the time allowed for loading are rather severe, and one of the objects of the arrangement is to release the railway cars as as quickly as possible, and so avoid demurrage charges which, in some cases, amount to as much as £1 10s per car per day. To insure speed and care,

(ABOVE) MELTERS ATTENDING FURNACE IN MELTING HOUSE OF STEEL-WORKS AT MOSSEND, LANARKSHIRE, SCOTLAND. (BELOW) CASTING PIT OF THE SAME PLANT SHOWING WORKMEN FILLING INGOT MOLDS WITH MOLTEN STEEL

the control boys on the bank have been specially trained, the operations and movements standardized, and the operating pulpits so placed as to give complete view of the whole range of the cooling banks, stocking bays and loading lines.

A general summary of the equipment, which has made Mossend one of the foremost steelworks in Great Britain, may be of interest. In the new melting shop, there are sixteen 60-ton open-hearth furnaces arranged in a single row, with the yard for collecting the raw materials directly in the rear. Four 5-ton overhead charging machines serve the furnaces and in the collecting shop are six 5-ton overhead electric cranes fitted with 52-inch circular lifting magnets. The molten metal is handled by five 100-ton ladle cranes spanning the casting pit. This shop which has an overall length of 1200 feet is divided into three parallel bays of 60-foot span. Gas producers of the Morgan type having the George-type feed, supply gas for the furnaces. The ingots are conveyed by railway cars to the hydraulic stripper, and thence to the gas soaking-pit furnaces. These are four in number, each having seven holes of sufficient capacity to accommodate four ingots in each hole. After reheating, the ingots are delivered to the mill by an electric self-tipping car.

MARINE ENGINEERING DEPARTMENT OF THE BEARDMORE NAVAL CONSTRUCTION WORKS AT DALMUIR, SCOTLAND, SHOWING GEAR WHEELS AND PINIONS READY FOR ASSEMBLING

Operating Equipment Described

The rolling plant equipment consists of a 36-inch cogging mill, equipped with a steam hydraulic guillotine, and a shape mill with three parallel stands of 32-inch rolls. The rolls are driven by 3-cylinder Markham-type engines, steam being supplied by a battery of Babcock & Wilcox-type boilers, served by a modern coal and ash handling plant. Electric power is generated from the exhaust steam in mixed pressure turbo-generators, the steam being conveyed to three heat accumulators and then driving one 2000 and two 1000-kilowatt generated sets. The steel bars, having been conveyed to two hot saws, are carried on live rollers to the cooling beds and thence to the stocking bays. A 16-inch mill has been installed for rolling smaller sections.

All of the auxiliary motors have been standardized and are of mill-type construction. Contactor control mechanisms have been installed on these motors and the master controllers mounted in suitable operating pulpits, which command a good view of the live rollers and the skid-gear.

For supplying the plate mill, a 40-inch cogging mill, installed by Lamberton & Co. is provided. The slabs are cut to weight by a guillotine shears, afterward being transferred to reheating furnaces by a Wellman overhead-type slab charger. The gas for all the heating furnaces in this part of the works is obtained from an ammonia recovery gas plant manufactured by the Duff Patents Co., Inc., Pittsburgh.

The plate mill is of the three-high type, and has two rolls 29 inches in diameter, with a middle roll 21 inches in diameter the length of roll barrel being 92½ inches. The lifting and the lowering tables are hydraulically balanced and electrically operated. Power is supplied from a 1500-kilowatt direct-current motor operating at a speed of 270 revolutions per minute. A double helical gear is used to reduce the speed on the mill spindle to 70 revolutions per minute, which is the normal operating speed. An 80-ton flywheel, 27 feet in diameter is mounted on the mill spindle and the energy stored at normal speed is 41,000 horsepower seconds. All plates pass through a mangle before they can reach the plate cooling beds. In order to increase output, this mill was re-equipped recently with mill-type motors of 40 and 60 horsepower and contractor control system in place of the old drum-type controllers.

The output of the plate mill is 2000 tons per week. After rolling the plates are conveyed from the mangle on live roller racks, and are then transferred to the cooling bed by tumbling gears. This enables the plates to be turned over thus exposing the under surface for inspection during marking off, an arrangement which enable the plates to be sent out with absolute confidence as to surfaces. Live rollers convey the plates to the cropping shears, a machine installed by Craig & Donald. This is driven by a 100-horsepower motor and is capable of cross-cutting the widest and thickest plates turned out from the mill. The sidecutting and splitting are dealt with by other sets of shears.

Excellent arrangements are provided for dealing with shipping orders. The stacking and loading banks are extensive and furnished with application for rapid handling, and for collecting lots for simultaneous arrival. The plates arrive from the mill by roller rack passing on the way over a weighing machine which records the shipping weight. Rectangular lifting magnets are installed on each of the loading cranes, facilitating rapid and easy handling of plates either for assembling or direct shipping.

The company makes use of electrical, gas, hydraulic and steam power for various requirements. The addition of the new 32-inch section mill is regarded as the finishing touch to the Mossend works.

Furnace Sets Record

What is believed to be a record for pig iron production in a blast furnace of its size has been made by the Weirton Steel Co. with its 600-ton furnace at Weirton, W. Va. On Feb. 25 it produced 823 tons of iron, and that that production did not suffer before or after to make that record possible is shown by the fact that on Feb. 24, 758 tons was produced and on Feb. 26, 700 tons was the output. In fact, the daily average production for the two weeks ended March 5 was 723 tons.

Making Fine Acid Nickel Steel--I

Instructions for Method of Charging and Melting and Step-by-Step Description and Discussion of the Reactions in the Furnace—Reasons for Procedure in Deoxidizing Bath of Molten Metal

BY W. P. BARBA AND HENRY M. HOWE

IN THE acid open-hearth practice, the general aim is to melt and decarburize the initial charge, to remove the oxygen incidentally introduced in this decarburization, to bring the charge to a high temperature in order to favor the deoxidation; to push this deoxidation further by means of silicon, and to complete it by means of an addition of manganese sufficient both for this purpose and for leaving in the steel for manganese content required. While doing this last we lower the temperature to that suitable for teeming, taking care that the bath temperature remains so high that the manganese reaction may complete itself, and we then teem the steel into ingots free from inclusions and other mechanical defects. Thus we "refine hot but pour cool."

The *raw materials* of the acid open-hearth process are pig iron, scrap steel, and in standard American practice a little iron ore. The ratio of pig to scrap is usually spoken of as if these two materials formed the whole charge. Thus the 40:60 ratio refers to the use of 40 parts, by weight of pig iron to 60 parts of scrap apart from the small quantity of ore used. This 40:60 ratio is the one assumed in this article.

Not more than 10 per cent of the whole charge should be in the form of turnings, lest the rapidity and the indeterminateness with which they oxidize introduce an indeterminate quantity of iron oxide into the charge. Here, as in all other respects, the working conditions should be brought as nearly as possible to a fixed standard, because it is difficult to compensate for the results of even minor variations in procedure.

When pig iron is relatively expensive it may be replaced partly, or even wholly, as a means of introducing the needed carbon, by charcoal, anthracite, or petroleum coke, when these latter may be had sufficiently free from sulphur.

Method of Charging

Half the pig iron should be spread upon the hearth, the scrap should be placed upon this, and the other half of the pig iron on top of the scrap. The reasons for this arrangement are, first, that the hearth should be protected by a layer of pig iron from being cut by the oxygen-bearing drops of molten scrap. As this molten metal trickles down, drop by drop, over the oxidized surface of the scrap immediately beneath, it is almost certain to become strongly charged with oxide, and hence to corrode the bottom, unless this is prevented by causing it to trickle over a layer of pig iron below it. The carbon and silicon of this pig iron will, of course, react energetically with these drops of molten oxygen-bearing iron, to deprive them of their oxygen. Second, the purpose of covering the scrap with the remainder of the pig iron is to protect it from the cutting effect of the flame, which thus is utilized for oxidizing the carbon and silicon of the pig iron, instead of being employed viciously to oxidize the scrap and, thereby, to cause it to attack the hearth and poison the bath with oxides, as just indicated.

The carbon content of a charge of 40 per cent pig and 60 per cent scrap is about 2 per cent. In melting, this should fall to about 1.25 per cent. For gun steel, the content of these impurities should be as low as possible, hardly over 0.05 per cent of each. In the case of small ingots, less than 26 inches in diameter and weighing less than 15,000 pounds, a slight increase in the phosphorus and sulphur content might be considered, but not in the case of large ingots, because in these the local concentration of phosphorus and sulphur, both in the axial segregate and in the interdendritic or local segregates, more easily causes a prohibitorily large content of these impurities locally, resulting in black ghost lines.

Manganese Aids Materially

There should be from 1 to 1¼ per cent of manganese present in the initial charge. Some of this oxidizes during melting, but an appreciable amount remains in the molten metal and aids both in the removal of sulphur in the form of manganese sulphide and in lessening the oxygenation of the bath. By this latter effect, it lessens the loss of manganese in the final additions. This restriction of the oxygenation of the bath, even to the end of the process by an initial manganese content as small as 1 per cent, is surprising. The intensity of the deoxidizing conditions needed in making ferromanganese in the blast furnace shows how readily manganese oxidizes; hence we should expect the initial manganese to be oxidized rapidly during the oxidizing stages, both in melting down when the upper half of the pig iron trickles down drop by drop over the oxidized crusts of the metal beneath it in a strongly oxidizing atmosphere, and also in the intentionally oxidizing stage, Period II, as shown in the accompanying diagram.

The nickel content of the initial charge should be somewhat less than that required in the final product, so that it may be rectified by additions of nickel at a convenient stage in the process. Rectifying by the subtraction of nickel is, of course, impossible.

Unless chromium is absolutely required by the specifications, it is advised that not more than 0.05 per cent of it should be present in the mixture, because of the difficulty of overcoming its tendency to cause inclusions and consequent laminations.

The diagram on page 750 is an attempt to express the various stages of this

Origin of Report

A SHORT time prior to the date of the armistice, the authors of this article submitted a report of progress to the steel ingot committee of the National Research council. The report was prepared in response to a demand for detailed information on the production of acid open-hearth steel for guns and shafting. The accompanying article is from the first part of the report, which was presented as a paper at the meeting of the American Institute of Mining and Metallurgical Engineers, New York, Feb. 20-23, 1922. W. P. Barba was vice president, Midvale Steel & Ordnance Co., Philadelphia, and Henry M. Howe is metallurgist, Bedford Hills, N. Y. The accompanying treatise is based on making a nickel steel containing 0.35 carbon; phosphorus, below 0.05; sulphur, below 0.05; manganese, 0.50 to 0.75; silicon, 0.15 to 0.30; and nickel, 2.50 to 3.75 per cent.

process graphically. Vertical distances represent temperature and horizontal time. For convenience, the process may be divided into five periods as follows:

I. Melting the charge.

II. Accelerating the oxidation of the carbon in excess of that needed in the product by oring and raising the temperature to the high point needed for the ensuing deoxidation of the metal.

III. Carrying the deoxidation as far as this can be done by means of the carbon of the bath and high temperature.

IV. Carrying the deoxidation still farther by adding the ferrosilicon while the bath is still at a high temperature and cooling.

V. Continued cooling, adding ferromanganese, to complete the deoxidation and give the product the desired manganese content, tapping, and teeming.

Period I: Melting

In the first period, the liquidus *BC* refers to the average melting point of the charge from time to time. The melting point of the scrap is, of course, much above that of the pig iron.

The more strongly curved line *AA* represents the actual temperature of the metal. Starting completely solid and at room temperature at the origin, it rises gradually during the first period, at the end of which it crosses line *BC*, so that the actual temperature of the metal coincides with its liquidus, or temperature of complete fusion.

The rise of temperature should be as rapid as possible so as to shorten this period, in the early part of which the hearth is attacked more or less seriously by the oxide of the melting metal which trickles down.

Period II: Oring

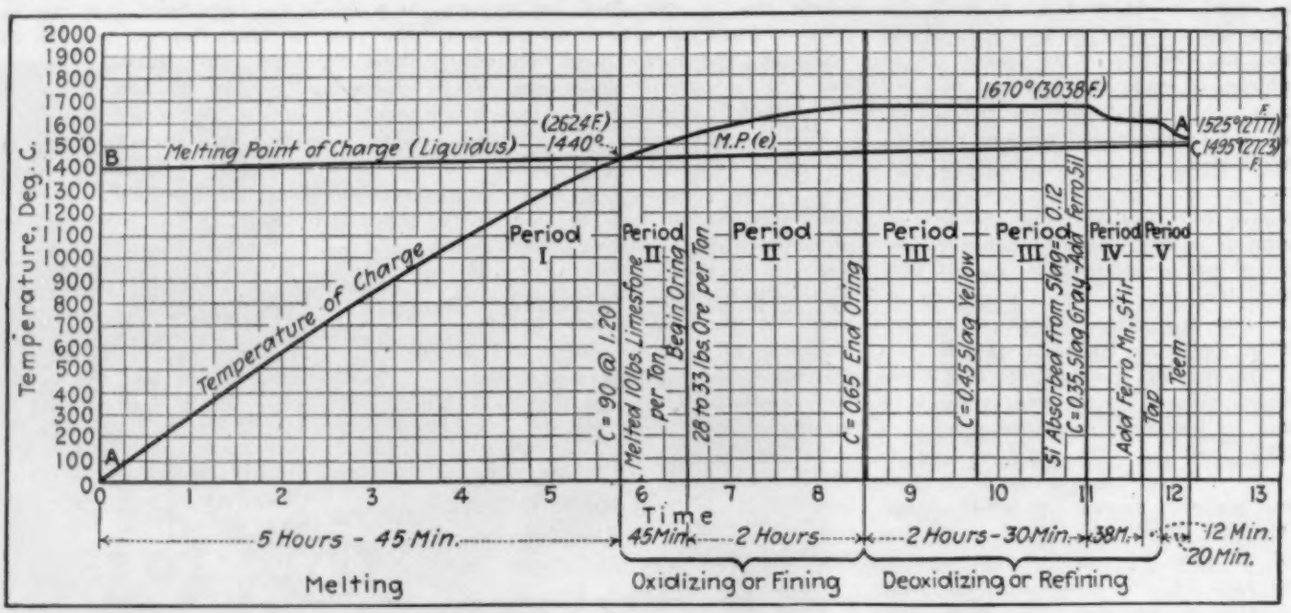
When the charge is completely melted, it should contain 0.90 to 1.20 per cent of carbon. We have now to remove this carbon rapidly. The first step is to add about 10 pounds of limestone per tons of charge, both that the slag may be fluid and that the carbon dioxide given off may start the metal boiling. This boiling should continue from this point on until very near the end of the process, in order to transfer to the lower part of the charge the heat reflected from the roof against the slag floating on the metal. It has often been proved that a "quiet bath" may be very heterogeneous in composition. If the circulation is not sufficiently rapid, it should be assisted chemically or mechanically. Mechanical stirring with rods is most beneficial from every point of view and is usual.

What may be called "chemical stirring" is that brought about by the evolution of carbon dioxide from the limestone and of carbon-monoxide gas within the bath itself by the reaction between the iron oxide in the slag and in the metal with the carbon of the metal. This reaction is brought about by the introduction of iron ore, or oring.

Fusion Must Be Complete

In about 45 minutes after complete fusion, the charge should be so hot that we may begin oring. The quantity of ore needed is usually 28 to 33 pounds per ton of charge and is usually added in several portions. A rich pure low-phosphorus Lake Superior hematite may well be used. The ore should not be charged before the metal has passed so far above its liquidus that there is no chance of its being locally so chilled by the ore itself, and by those features of the reaction which are endothermic, that this reaction will not take place actively—hence the considerable gap between lines *AA* and *BC* when the oring begins.

At about 2 hours and 45 minutes from the beginning of Period II, the carbon should have fallen to about 0.65 per cent. This should bring this period to a close; because the time between the arrival of the carbon at this content (0.65 per cent) and its arrival at the final content (0.35 per cent) is only about enough to insure an approximately thorough removal from the charge of the oxygen which has incidentally been incorporated into it in this second or oring period.



APPROXIMATION TO A TIME-TEMPERATURE DIAGRAM OF THE ACID-OPEN HEARTH PROCESS ON NICKEL STEEL

Period III: Deoxidizing or Refining by Carbon

The object in Period III is to carry on the removal of the oxygen from the metal by means of the carbon still present, and of the very high temperature which gives that carbon its needed energetic action on the oxygen. The observations of Doctor Burgess indicate that the temperature of the metal at this time is about 1670 degrees Cent., which is about as high a temperature as the metal can be brought to without endangering the roof or shortening its life unduly.

At present, we have no direct means of following the removal of the oxygen from the molten metal, nor indeed do we know how much residual oxide is compatible with the needed excellence of the product. Instead we rely on the removal of iron oxide from the slag, on the principle that as the iron oxide content of the metal falls, that of the

slag decreases with it. And, in general, the iron oxide distributes itself between metal and slag in proportions tending to reach an equilibrium, the ration of which doubtless varies with the temperature, the carbon content of the metal, and other conditions.

Slag Indicates Contents

Fortunately, the appearance of the slag gives so close an indication of its content of ferrous oxide that the open-hearth process need not be held back to allow a direct chemical determination of that oxide to be made. This appearance may be noted in a slag cake about ¼ inch deep and 3 inches in diameter. But such cakes are seldom made, because sufficient information can be had from the thin layer of slag which adheres to the shank of the test ladle used to secure the many samples of metal required for observation during the process. The outer surface of this slag is dark brown, like that of glazed drain tiles, probably because its ferrous oxide is converted into ferric oxide in passing through the air. The cross section is rather waxy. The steelmakers speak of its having an increasing degrees of vitreousness as the ferrous-oxide content of the slag decreases. To the layman, it suggests rather an increasing degree of waxiness.

The color of the interior of the slag sample, apart from the rather constant dark brown of the crust, is, next to its vitreousness, the best indication of the progress of deoxidation. A slag rich in iron oxide, and hence overlying a bath rich in oxygen, is dark brown to black. As the oxygen is removed from the metal and the ferrous oxide from the slag, this color grows continuously paler, to a yellow, a gray, and if the deoxidation is complete in the electric furnace, even to a white.

By the middle of Period III, when the carbon content has fallen to about 0.45 per cent the ferrous-oxide content of the slag should be reduced to about 18 or 20 per cent., and its color should be a clear pale lemon yellow in the case of a charge initially nearly free from manganese; and of a like tint, but more greenish, in the case of a charge containing initially about 1 to 1¼ per cent of manganese, as indeed is desirable. The manganese oxide adds a strong greenish cast and sometimes a dark greenish central "streak" to the color which the ferrous oxide gives itself. In this case the 1/8 to 3/16-inch thick section of the slag sample has five differently colored layers, two dark brown outer ones, then two of the characteristic yellow, then a central darker cloudy greenish "streak," merging into the yellow ones.

In the remaining half of Period III, the continuing removal of the iron oxide is recognized by the change in the color of the slag from yellow toward gray, in case the charge contains initially 1 to 1¼ per cent of manganese. This color indicates the ferrous oxide of the slag has been reduced to about 15 per cent, and this in turn that the metal is as thoroughly deoxidized as it can be by the action of its carbon alone. The color and the texture of the slag referred to are typical only of the average practice, and both are affected by the volume of the slag, which depends, first on the content of silicon and manganese in the charge; second, on the rapidity with which the charge is melted;; and third, on the character and composition of the bottom.

During Period III, a certain quantity of silicon is reduced from the slag by the carbon of the metal, which should now have a silicon content of about 0.12 per cent. This increase in the silicon content of the metal, at least up to 0.12 per cent, is recognized by a progressively increasing compactness of the test ingots of the metal and their freedom from gas cavities. This, in turn, is due rather to the decrease of iron oxide in the metal than directly to the increase of silicon content. It has been reported, lately, that the silicon content of the metal at this point, as determined by chemical analysis may include an important quantity of silica. One of us has good evidence that, in good practice, the increase of silicon content is not merely apparent but real, and any content of silica is negligibly small.

Period IV: Deoxidizing by Silicon

A sample of metal is now taken for the "go ahead" test, that is, a test ingot for a combustion determination of the carbon present in the charge. This test should show that the carbon is now about 0.35 per cent, or close to that aimed at in the final product, so that we may safely go ahead with all preparations for tapping. To insure that the carbon in the product will be close to that found in the "go ahead" test, we now arrest the decarburization by two distinct steps. First, at the time of drawing this, we make an addition of ferrosilicon, which will be attacked by any oxygen still present in preference to the remaining carbon. After this we decrease the temperature by lowering the damper and shutting off the air and gas, so that the only circulation through the melting chamber is due to leakage. We here act on the principle that the oxidation of the carbon is favored by a high temperature and opposed by a low one, as is well known to be true in the bessemer process. A visible drop in temperature is shown at once by the changed appearance of the surface of the slag which, by the time the laboratory reports are received, will probably show a few dark cool points.

The ferrosilicon, which may be of the 11 per cent silicon grade, is added while the temperature is still so high that it melt almost immediately and quietly, that it attacks quickly any oxides remaining, and that the resultant silicates coalesce readily, rise to the slag, and leave the bath, which becomes quiet, and practically ceases bubbling.

The cooling must not go so far as to interfere with the prompt melting of the ferromanganese in Period V, and its reducing any residual oxide. The precaution is easy to carry out successfully.

Period V: Adding Ferromanganese and Tapping

At the end of about 38 minutes, Period IV comes to an end, and by this time the ferrosilicon should have completed, as far as it can, the deoxidation of the metal. We now charge the ferromanganese. This addition is purposely delayed until the bath is thoroughly deoxidized in order to prevent any considerable loss of manganese, primarily in order that the small loss of manganese may testify to the thoroughness of the deoxidation caused by the action of temperature and carbon in Period IV, and secondarily because any considerable loss is likely to be an indeterminate one and thus to lead to irregularities in the composition of the product. Of this manganese, a small quantity may be consumed in still further reducing the ferrous oxide of the metal, but most of it remains in the metal, giving it the physical qualities called for. At the end of about 12 minutes, the diffusion of manganese should be so complete that we may tap the charge into a ladle, in which the temperature falls still further, nearly to the liquidus. The steel is held in the ladle long enough, say 20 minutes for 60 ton charges which are to be poured into very large ingots, to bring it to the relatively low temperature which is desired in American practice. We now teem. This brings us to the end of Period V, and therefore, to the end of the whole operation.

The reduction of the ferrous-oxide content of the slag to 15 per cent or less and the change of its color

to gray at tapping time are trustworthy indications that the deoxidizing work of the process has been thoroughly done. In order that this may occur with the normal rate of decarburization, the ferrous-oxide content of the slag should have fallen at least as low as 18 per cent, and it should be yellow, when the carbon content of the metal has fallen to 0.45 per cent. These numbers refer to normal standard conditions, especially as to the weight and composition of the slag, and they may be changed materially by any one of various departures from the normal. For instance, to "run" or melt the roof seriously adds silica to the slag, and by thus diluting its iron oxide lightens its color.

But if the initial charge contains about 1 to 1.25 per cent manganese, as is to be desired, the resultant manganous oxide of the slag affects these colors decidedly, giving them a greenish tint. Under these conditions, a proper degree of removal of ferrous oxide is indicated if the slag is greenish yellow when the carbon content of the metal has fallen to 0.45 per cent, and greenish gray at tapping time. This greenish yellow slag may contain 15 per cent or less of FeO.

Loss of Manganese on Addition of Ferromanganese

A further and extremely important indication that the metal has been thoroughly deoxidized before the ferromanganese is added is given by the loss of manganese in this reaction, which should not much exceed 10 per cent of the added manganese. At some well-conducted works, after adding 0.73 per cent of manganese to a bath containing 0.10 per cent, there is found in the ingots about 0.65 per cent, representing a loss of 0.18 per 100 of steel, or 4.61 per 100 manganese.

Such inferences from the loss of manganese can be trustworthy only when the conditions in general, and in particular the time between adding the ferromanganese and determining the residual manganese, are strictly constant. If a larger proportion of the added manganese is lost, taking into account the length of time between adding ferromanganese and teeming, it is good evidence that the ferrous oxide had not been thoroughly removed from the steel. It is recommended that this point be watched with great care.

At the end of the oring, Period II, the bath of molten steel is richly charged with oxygen, probably in the form of ferrous oxide FeO, and the next task is to remove this oxygen as completely as possible. This means transferring the oxygen from the ferrous oxide to one or another agent, such as carbon, silicon, and manganese, each of which in its turn becomes oxidized. The procedure should be such as to cause as much of this oxygen to be removed by carbon and as little as possible by silicon and manganese, because the oxide of carbon is gaseous and escapes spontaneously, whereas those of silicon and manganese are molten. They are liable to remain entangled in the solid metal in the form of inclusions, which weaken and embrittle it greatly.

In order that as much as possible of the oxygen should be removed by the carbon, it is necessary to work at as high a temperature as possible, because the power of the carbon to combine with the oxygen increases with the temperature. Hence the temperature of the metal is raised as rapidly and as high as is consistent with safety to the roof of the furnace.

As the quantity of iron oxide remaining in the bath decreases, the carbon of the bath, finding itself no longer fully occupied in deoxidizing iron oxide, attacks the silica of the slag and hearth, introducing silicon into the molten metal. By the time that this action has raised the silicon in the bath to about 0.12 per cent, the power of the carbon to remove farther oxygen has become so far exhausted that the further deoxidation of the dissolved iron oxide by this carbon has become so slow that it becomes expedient to use a stronger deoxidizing agent. Our choice naturally lies between manganese and silicon.

In the acid open-hearth process silicon should be used here, chiefly because the silica which it forms does not attack the hearth of the furnace as the manganous oxide resulting from the use of manganese does, forming manganese silicate.

It is true that, in careless hands, the use of silicon may cause the formation of harmful inclusions of silica, but if care and skill are used we believe that this danger can be avoided fully. Of course whatever deoxidizing agent we use we must provide for the removal of its oxidized products. In the case of carbon, these products escape spontaneously because they are gaseous. In the case of manganese, they escape readily because the resultant silicates of manganese are fusible over a wide range of composition, so that they coalesce easily into masses so large that they rise quickly to the surface by gravity. But the product of the oxidation of silicon, silica, is infusible by itself at the open-hearth temperature. Hence should any of it remain uncombined with metallic oxides its individual particles would stay suspended as a fine emulsion and, persisting in the finished product, injure it greatly. The use of silicon presupposes the presence of enough oxide of iron or manganese to form with the resultant silica a fusible and hence a coalescing product, which will remove itself freely by gravity. This is in harmony with the general procedure, using silicon for nearly but not quite the last of the deoxidation, when the resultant silica finds residual oxides to combine with, and then completing the deoxidation with manganese, the products of the oxidation of which are fusible and hence self-removing.

Silica Is Lessened

Moreover the quantity of silica resulting from the removal of one part of oxygen from the molten metal by silicon is clearly far less than the quantity of manganese silicate resulting, first, from the oxidation of manganese to manganese oxide by that oxygen, and, second, from the formation of manganese silicate by the scouring action of the manganous oxide on the hearth.

That manganese silicate does form, if manganese instead of silicon is added at this stage, has been proved.

A welcome effect of the silicon added at this stage, when the oxygen content of the bath has become so low, is that it practically arrests the oxidation of the carbon, probably by combining by preference with that oxygen. We now have the appearance of complete equilibrium, with no further transfer of any of the elements present from metal to slag. This arrest of the progressive oxidation of the carbon, manganese, and silicon simplifies the conduct of the process by assuring us that the content of these elements found in the "go ahead" test will persist and occur in the ingots, practically undiminished in the case of carbon, and but slightly diminished in that of manganese.

Manganese in the form of ferromanganese is now added and stirred in, both to push still farther the removal of oxygen from the bath and to give the metal the intended manganese content. Looking back on this deoxidation as a whole, we note first that carbon is the most desirable deoxidizing agent, because its oxides are gaseous and cannot form inclusions; second, that silicon is next in merit in acid furnaces, because it leaves less inclusions than manganese; and third, manganese is the last addition to make in such furnaces, because it

is the strongest and can remove most of the remaining oxygen.

Accordingly, by maintaining a very high temperature we enable the carbon to do as much as possible of the work of deoxidizing. We then use silicon to do as much of the remaining deoxidation as it will; and only then do we add manganese to complete the little deoxidation still to be done, and to give the product the needed manganese content.

The use of aluminum, titanium, vanadium, and like deoxidizers for the specific purpose of removing the last of the oxygen from the bath, as distinguished from their legitimate and growing use for introducing some of these elements as essential constituents of an alloy steel, should be discouraged. It affords so easy a way of covering up imperfect deoxidation in the normal way, chiefly by carbon, then by silicon, and last by manganese, as to form a constant temptation to slovenly working, and especially to slighting the thorough deoxidation by carbon at a prolonged high temperature. The oxide products of deoxidation by these elements are not gaseous, and tend to form inclusions.

First Rolling of Bar Iron in America Described

An interesting historical narrative of the circumstances under which the first iron bars were rolled in the United States is told in a booklet entitled "Iron Making 1814" which has been put out by the Penn Iron & Steel Co., Creighton, Pa. The account of the rolling of the bars and of the persons engaged in the enterprise is taken from the *Cambrian*, a monthly periodical published in the interest of the Welsh people and their descendants in the United States and devoted to history, biography and literature. This extract which is Volume 5, 1885, tells of the achievement in the following language:

"In the year 1814, Thomas C. Lewis, his brother George, along with three other brothers and their families, quitted the Iron Works of Penydarren at Merthyr Tydvil, Glamorganshire, S. W., and left for America; being iron workers, they went direct to Fayette county, Penna., where several iron works, on a small scale, were in operation. Some time after they formed the acquaintance of Col. Isaac Meason, the iron merchant. Consultations were held between them occasionally about the expediency of rolling iron instead of hammering it, as they were doing; at least he resolved to build a mill for the purpose. The services of these two brothers were secured for carrying out the project—Thomas C. was chief engineer, and George to be his assistant. The mill was built in a locality known then as Plumstock, but which is now called Middletown, on the Redstone Creek, between Connellsville and Brownsville. The rollers were obtained from the blast furnace of Dunbar, and were finished and prepared for work by George Lewis. The establishment included two puddling furnaces, one heating furnace and one refinery. David Adams and another, were the puddlers. Samuel Lewis was the heater; James Lewis the holder; Henry W. Lewis was clerk of the firm; and Samuel C. Lewis, the son of Thomas C. Lewis, was the hooker-up. He was 14 years of age and lived up to Aug. 11, 1886, when he died at Pittsburgh, at the venerable old age of 80 years. George Lewis was the roller, and he was the Welshman that rolled the first bar of iron in America; James Pratt was the refiner; Benjamin Davies (the father of Mrs. Wm. T. Davies, and grandfather of T. W. Davies, ex-revenue collector) was the blacksmith. In 1824, a great freshet in the stream washed away a large part of the mill, and the remaining part was removed to Brownsville. The next account we have of George Lewis is, that in 1825 he was in partnership with Reuben Leonard building and putting in operation the Dowlais Mill, at Pipetown, Pittsburgh. This George Lewis was the father of George and James C. Lewis, who built the rolling mills at Sharpsburg, near Pittsburgh, in 1846, under the firm name of Lewis, O'Hara & Lewis. Many inquiries have been made for years past whether these Lewises were Welsh or English. The above facts and account shows that they were originally thoroughly Welsh, from Merthyr Tydvil, Glanmorganshire, S. W."

George T. Lewis, president and general manager of the Penn Iron & Steel Co., is the son of George Lewis referred to in the narrative.

Reviews Association's Activities

Year Book, 1921, of National Association of Cost Accountants; cloth; 398 pages, 5½ x 8¾ inches; published by the National Association of Cost Accountants, 130 West Forty-second street, New York, and for sale by THE IRON TRADE REVIEW; price $3.00 postpaid.

This book, which is a resume of the activities of the National Association of Cost Accountants during 1921, is claimed to be one of the most valuable collections of cost material which has been assembled. One of the features is a report of the international cost conference, held in Cleveland, Sept. 14 to 16, including all of the papers and discussions which were presented. More than 600 cost men attended the conferences, including representatives of the British Institute of Cost and Works Accountants, the federal trade commission, the Chamber of Commerce of the United States and about 40 trade associations. Each session was devoted to the discussion of some practical cost subject and as a result the book is filled with concrete and useful suggestions which have a definite application to daily business problems.

For convenience the book is divided into 11 sections as follows: Section I, The Convention; Section II, Reports of officers and Directors, 1921; Section III, Interest as an Element of Cost; Section VI, Cost Systems as a Means of Preventing Waste; Section V, Uniform Methods and Standardized Costs; Section VI, Distribution of Overhead Under Abnormal Conditions; Section VII, Banquet Addresses; Section IX, List of Members Alphabetically; Section X, List of Members Geographically; and Section XI, Chapter Officers. Each of the sections devoted to papers are arranged by first presenting the subject paper and following with the discussion.

Instructions for Blacksmiths

The Blacksmiths' Pocket Book, by Tom Wormald, 87 pages 4¼ x 7¼; cloth; published by Scott, Greenwood & Son, London, and for sale by THE IRON TRADE REVIEW, Cleveland, for $2.00.

This is a concise instruction book for apprentices in forging, and differs from a number of similar books in that attention is given to practical blacksmith work rather than to exercises for school forge shops. In the first chapter, the apprentice is introduced to the smith's tools, stress being laid upon swages, cleavers, tongs, etc. used under hammers. Instructions for reading drawings are given in the second chapter, and in the remaining pages of the book, the author deals with typical jobs, involving drawing, welding, and other operations in general smithing. Methods for making many types of forgings are described, including shackles, hand levers, clamps brake levers, shaft welds, knuckle joints, and engine parts. Chapters are devoted to die making, press work, and miscellaneous freight car work.

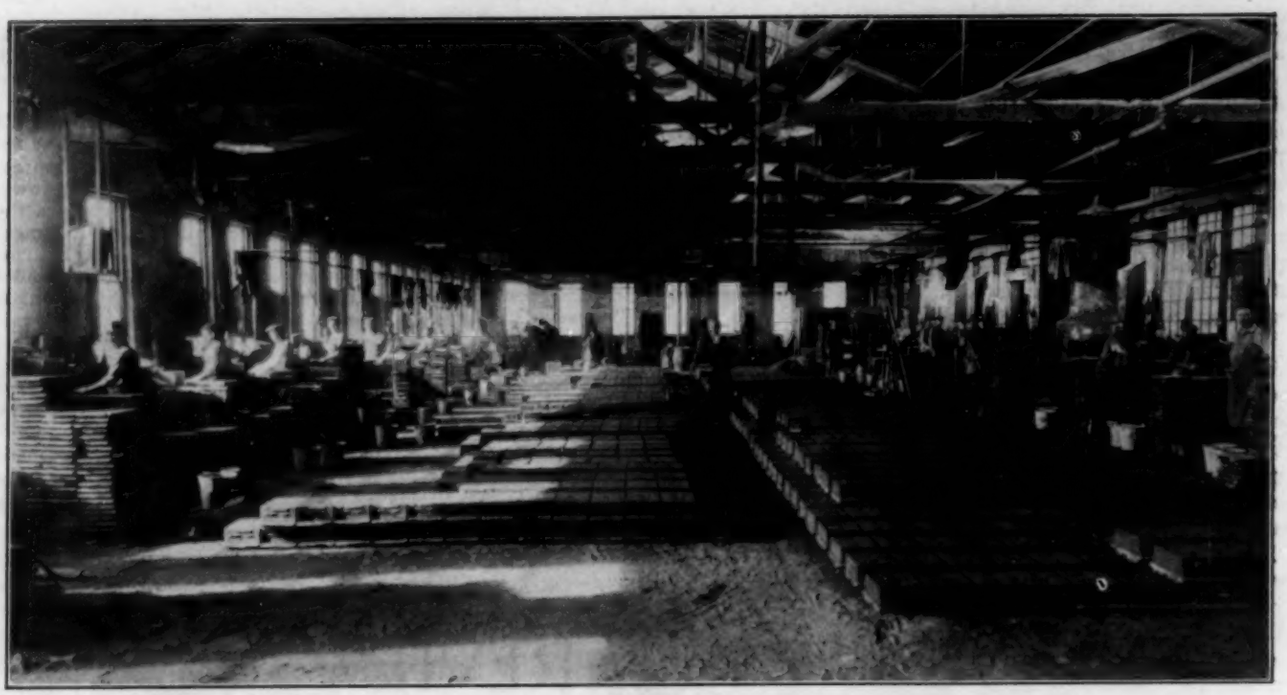


Fig. 1—Shear castings are made in a well-lighted foundry equipped exclusively for this purpose

Grinding Shears in New England Plant

BY HERBERT R. SIMONDS

HAND shears or scissors are designed with practically no straight lines, the outlines and surfaces for the most part consisting of irregular curves. For this reason the grinding and polishing operations involved in shear manufacture must be performed by hand. The Acme Shear Co., Bridgeport, Conn., one of the largest shear manufacturers in the world, produces cast-steel shears and scissors complete from the raw material to the finished product, and this article will illustrate and describe some of the interesting grinding problems involved.

A large number of operations are necessary in completing a pair of shears, the most important being molding, grinding, polishing, plating, buffing, drilling, assembling, sharpening, cleaning, inspecting and packing. The shear parts are cast in the foundry shown in Fig. 1, which is devoted exclusively to this class of work, approximately 50,000 castings being made per day. The first operation after the castings are shaken-out is to break off the gates after which the parts are tumbled to remove the sand and rough spots. The castings then are delivered to the grinding department.

One of the first grinding operations is illustrated in Fig. 2 and consists of rough-grinding the inside and outside of the blade. The operator holds the casting by the handle and brings it in contact with the upper side of the wheel. Pressure then is applied with a lever, as the illustration shows. After one side is ground in this manner, the pressure is released, the piece turned over and the other side ground. The operator becomes skilled at this work through long practice, an experienced man handling as high as 7000 parts per hour. A setup wheel of special design is used for this operation. It is 26 inches in diameter, is coated with No. 90 abrasive grain and is operated at 1500 revolutions per minute imparting a peripheral travel of approximately 10,200 feet per minute. Due to the irregular nature of the work, the equipment is not standardized. Regardless of the utility of the grinding attachments sometimes furnished the experienced shear finisher, he usually will discard them and will substitute *home-made* devices of his own design. Thus in Fig. 2, the operator has rigged-up a lever which suits his needs. The plant manager generally allows considerable latitude on alterations in this respect.

Shears are steel castings accurately ground and polished on setup wheels operating at high peripheral speeds. A high degree of finish is necessary as shears are sold generally on external appearance. All parts are inspected carefully and each pair of shears is fitted individually.

Buffing operations on shears are performed without attachments at the Acme plant. The wheels are set comparatively low so that the operator's work almost directly over them. By this method, the time required to take the pieces from the bench and return them after buffing is reduced to a minimum. A section of the buffing department is shown in Fig. 3. Here the chief object is to impart a high finish, or satisfactory polish.

The wheels used are of the same design as employed in the rough-grinding department. They are 18 inches in diameter, are set up with No. 150 abrasive grain and are operated at 1800 revolutions per minute, imparting a peripheral velocity of aproximately 8400 feet per minute. The operator holds the shear part with his right hand, places it on top of the wheel and imparts the necessary pressure with his left hand. A leather pad is used for this purpose. Regardless of the material of which a pair of shears is made, in the majority of cases the purchaser is influenced by the finish. For this reason, considerable care is exercised in the plating and polishing operations. After the surfaces have been ground and buffed to the desired smoothness, the shear parts are placed on wire hangers, with about 300 parts to each lot, and are immersed in a nickel plating solution. Each

FIG. 2—SHEAR GRINDING IS PERFORMED BY HAND WITH A LEVER ATTACHMENT TO IMPART PRESSURE. FIG. 3—SHEARS ARE BUFFED ON WHEELS SET CLOSE TO THE FLOOR

batch of shears is left in the bath for one hour. The type of hanger used and one end of the Acme company's plating room, are shown in Fig. 4. The operator in this illustration is placing a batch of shear parts in the plating solution. It costs approximately 35 cents to plate 100 pairs of shears, including the overhead expense of the plating department.

After plating, the parts are polished, the blades are sharpened and the shears are assembled, pointed, adjusted and delivered to the shipping room. The sequence of the foregoing operations has been worked out carefully with respect to ease in handling. The sharpening of the blades could not be performed economically after the shears are assembled and for this reason as much sharpening as possible is performed while the parts are separate. The final buffing of the outside surface of the shear blades, however, is performed more conveniently after assembly. Placing this operation as near the end of the sequence as possible has the advantage of reducing the subsequent marring of the finished surfaces to a practicable minimum.

In the pointing operation, the blades of each individual pair of shears are brought into alignment, that is, the points are brought together when the shear is closed. Usually when first assembled, the points either will overlap or will not close. This is overcome by grinding the contracting surfaces at the handles or by grinding down the blade points. The part to be ground depends upon whether the shears overlap or do not close. This is a simple operation.

Flawless castings are required in shear

FIG. 4—SECTION OF THE NICKEL-PLATING DEPARTMENT WHERE THE SHEAR PARTS ARE HANDLED IN LARGE LOTS—FIG. 5—ALL CASTINGS ARE INSPECTED CAREFULLY FOR FLAWS AND IMPERFECTIONS

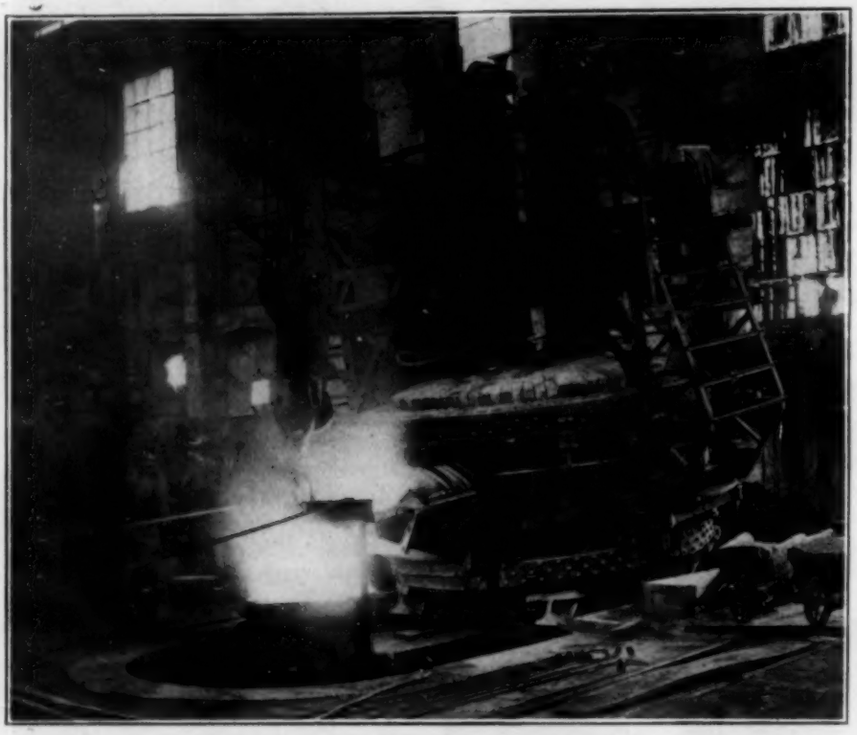
manufacture. To make sure that none but satisfactory castings are sent to the grinding room, the parts are inspected after the tumbling operation. An inspector at work is shown in Fig. 5. Each casting is examined carefully and is compared with a master casting to detect dimensional inaccuracies. Because of this thorough inspection, it has been found impossible to use conveyor belts for speeding-up the work.

Do Schools Graduate Too Many Engineers?

Thousands of applications for engineering positions continue on file at the employment service of the American Engineering Council of the Federated American Engineering societies, 29 West Thirty-ninth street, New York. The mining enginers, it is said, have been hardest hit, but it is considered likely that more mining engineers will be required due to the expected resumption of operations at copper mines. The total number of men registered, according to Walter V. Brown, manager of the employment service, is 3209. In January, new registrations were received from 142 unemployed engineers and positions found for 131 men. About eight engineers are being placed daily. Most of the unemployed engineers are college graduates and some have earned salaries as high as $15,000 per year.

Italians Design Electric Melting Furnace

An Italian automobile builder, the Fiat Corp., has decided to place on the market a new electric furnace which it has developed in its own shops during the past five years. The first of these furnaces was installed in the company's shop in 1917, and after it was put into operation new features were developed and other furnaces built and put into operation. With these furnaces the Fiat Corp. states it produced as high as 1000 metric tons of finished steel per month. Six furnaces of a capacity of between 5 and 6 metric tons have been built for the Fiat Corp. and six of 20 to 25 tons capacity are now being built for the Piedmontese Co., a subsidiary of the Fiat Corp. A number of furnaces also are being built for other Italian steel plants. One of the principal features of the Fiat furnace is the method of fitting the electrode holders to the top to prevent passage of air currents or flame, where the electrodes enter through the roof. With this arrangement it is claimed the electrodes are consumed more slowly, the lining of the furnace is preserved, and less power is lost while melting the steel. Also the claim is made that heats can be taken out more frequently.



TAPPING A 6-TON ELECTRIC FURNACE—NOTE THE LADDER AND PLATFORM WHICH ENABLE THE WORKMEN TO REACH THE ELECTRODES

The electrode stands which are designed to form a sealed closure around the electrodes can be operated to obtain the required movement of the electrodes by two screws placed in the grooves which guide the electrodes and which turn lugs fastened to the cover. The rotation of the screws is obtained through spiral gears connected to a small electric motor controlled by the operator on the platform.

All parts are easily accessible for the ordinary maintainance and cleaning. The electrode stands each form a unit which can be easily moved and replaced by a crane without interfering with the furnace proper, as indicated in the accompanying illustration. The electrode holder with its sealing device can be applied to any other type of arc furnace with few changes.

The body of the furnace consists of a steel shell lined with three layers of refractories. The first layer is made slightly conductive to help carry current to the three collectors in the bottom as is explained later. The bottom and sides are made of dolomite. The roof is built of silica brick and normally lasts for 120 to 130 heats. The furnace is tilted on a rack by hydraulic power. Two doors are provided on opposite sides of the furnace for charging the metal.

Power is transformed to 130 volts for use in the furnace. The secondary connections of the transformers form a star, a different point of which is connected to each of the three electrodes. A cable from the center star of the transformer shielded with a flexible tube is fastened to the bottom of the furnace by bronze clamps, and is then grounded.

Three collectors are symetrically located under the lining in the bottom of the furnace under the electrodes, and are connected with a copper plate in the under layer of refractory material. The purpose of the copper plate is to facilitate the conductivity of the bottom by collecting the current on a large surface, and to moderate as much as possible the inevitable fluctuations of the current which take place between the start and the end of a heat.

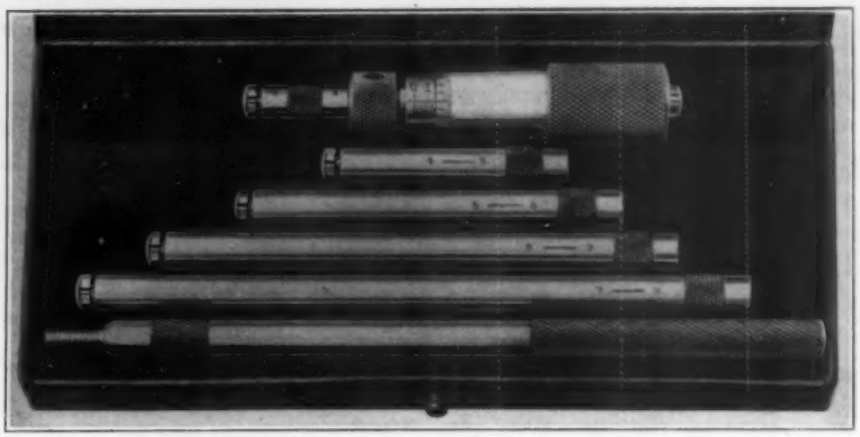
Adds Alloy Steel Course

To meet a growing need for specialists in metallographic analyses the college of engineering of the University of Wisconsin has established a course in metallography in the department of mechanical engineering, with an enrollment of 60 students. The work is in charge of E. D. Fahlberg, professor of chemical engineering, and covers an intensive study of alloys and alloy steels to train engineers to take places either as consultant experts or in plants manufacturing high grade machinery and mechanical devices which maintain their own departments of analyses of this character.

Inside Micrometers Have Wide Range of Use

A new set of inside micrometer calipers used in obtaining internal measurements of cylinder and rings as well as for taking linear measurements, testing parallel surfaces, comparing gages, making comparisons for fits, setting calipers, and similar work, has just been brought out by the Reed Small Tool Works, Worcester, Mass. These calipers, as shown in the accompanying barrel, spindle and thimble, the regulation diameter parts ordinarily used in outside micrometers are employed. Graduations are to thousandths of an inch. A feature of the new caliper is that by changing the position of the detachable handle for right or left-hand work, the graduations on the barrel are presented for easy reading. This handle permits taking measurements in holes or other inaccessible places or gaging throughout the length of a cylinder bore.

The micrometer has a run of 1 inch. Extra rods fitted with anvils allow quick changes, and are interchanged by unscrewing them from the threaded stud at the end of the barrel. Each rod is threaded internally and ground square at the hardened end, which sets squarely against the barrel shoulder. The rod at the point of measurement is fitted with a hardened tool steel anvil which can be adjusted to lengthen the rod and compensate for any wear resulting from constant use. Anvil faces are ground on a small radius so that they may be used for both parallel and curved surfaces. The standard set consists of the micrometer, an adjusting wrench and five rods, giving a range from three to eight inches.



A COMPLETE SET OF INSIDE MICROMETER CALIPERS MOUNTED IN A PROTECTING CASE

Problems due to the growth of motor transportation, formed the subject of discussion before a joint meeting of Boston engineering societies held recently. John N. Cole, commissioner of public works, Commonwealth of Massachusetts, outlined the growth of competition between the motor truck and the railroads and discussed the question of maintenance of highways. Prof. William H. Hart gave a talk on recent developments in highway transport, and the necessity of research in that field.

FIG. 1—THE ATTACHMENT WITH THE COVER REMOVED SHOWING THE POSITION OF THE LINKS AS THEY ARE FED DOWNWARD

FIG. 2—THE CHAIN LINKS ARE FED IN AN INCLINED RACEWAY AND PUSHED PAST THE GRINDING WHEEL FACE

Attachment for Grinding Chain Links

Under some conditions, semiautomatic devices can be used to advantage for snagging small castings. Such a fixture, shown in the accompanying illustrations, is in use at the plant of the Arcade Malleable Iron Co., Worcester, Mass., for grinding the ends of malleable iron chain links. The attachment is *home made*, but it answers all practical purposes as it reduces the grinding time 50 per cent as compared with the operation of finishing the links by hand.

The device, in operation, is shown in Fig. 2, while Fig. 1 illustrates the working principle, with the top plate of the device removed. The links are fed in at the right, sliding down an inclined runway until they come in contact with the grinding wheel face. After each link is ground it falls into a discharge trough and is carried to a container. The operator feeds in the links, one at a time, pushing them down past the wheel. The correct relation between the wheel face and the work is maintained by a cross-feed screw, actuated by the hand wheel at the right in Fig. 2.

British Foundrymen Will Visit Casting Centers

Accepting the invitation of the American Foundrymen's association, Oliver Stubbs, president and Thomas H. Firth, past president of the Institution of British Foundrymen, will sail for America, April 8 on the steamer SCYTHIA for an extended tour of the United States and Canada. During their visit in the United States, which will extend until about June 1, Mr. Stubbs and Mr. Firth will visit the large foundry centers of the eastern and central states. It is probable that they will be unable to remain for the American Foundrymen's association convention and exhibition in Rochester during the week of June 5, owing to the opening of the British foundry exhibition in Birmingham which also is held in June.

Mr. Stubbs is joint managing director of Joseph Stubbs, Ltd., iron founders and manufacturers of textile

machinery in Manchester, England. Mr. Firth, who was elected president of the Institution of British Foundrymen in 1918, has been prominent in the activities of that society for a number of years. He is manager of the Brightside Foundry Co., Ltd., Sheffield.

Introduces Safety Drill and Tap Chuck

To eliminate burning and breaking of drills which are given heavy service through continuous use, the Save All Tool Co., Waltham, Mass., has brought out a friction drive safety drill and tap chuck. This device, which consists of a chuck and drill collect, is constructed similarly to a safety quick change chuck developed by the same company previously and described in the Dec. 8 issue of THE IRON TRADE REVIEW. The new chuck has a No. 2 Morse taper shank and will accommodate ⅛ to ⅜-inch straight shank drills and taps while the earlier chuck has either a No. 3 or No. 4 Morse taper shank and will accommodate drills from ¼ to 2 inches.

Steel Founders Discuss Research Problems

At a recent meeting in Milwaukee the officers and operating representatives of the Electric Steel Founders Research group discussed reports on research work on annealing, core practice, facing sands furnace and pouring practice. An inspection trip also was made to the plant of the Sivyer Steel Casting Co.

The research group was formed about two years ago for the systematic prosecution of co-operative technical work which could be directly applied in improving the manufacture of steel castings. The idea originated from the realization that the technical experts who direct the operating departments of steel foundries are prevented by their routine duties from concentrating on necessary research work. It was felt that the investigations could be carried on more effectively if they were under the direction of one individual who could co-ordinate the technical activities of a few plants whose methods and products are similar.

The members of the group are the Electric Steel Co., Chicago; the Ft. Pitt Steel Casting Co., McKeesport, Pa.; the Lebanon Steel Foundry, Lebanon, Pa.; the Michigan Steel Castings Co., Detroit, and the Sivyer Steel Casting Co., Milwaukee. The group's headquarters are at 639 Diversey Parkway, Chicago, where Major R. A. Bull, research director of the organization, maintains his office.

Mines Bureau Outlines Research Work

Dr. H. Foster Bain, director, bureau of mines, announced today that the investigation the bureau is to make of the iron and steel industry in the Birmingham, Ala., district has been divided into these three major parts:

A detailed economic study of the whole iron and steel industry in the district, from the ore in the ground to the finished product.

What proportion of the gangue material associated with the iron ore of the district should be removed in ore dressing plants.

What proportion of the gangue of the iron ore of the district should be removed in the blast furnace for the most efficient practice.

A detailed study, Dr. Bain said, will be made of the methods of mining, handling and concentration of the ores, in turn to be correlated with studies on furnace practice and the use of coke best adapted to the treatment of the ores. The utilization of the siliceous ores, which are now not in favor, is another point scheduled for consideration. Whether the siliceous ores of Tennessee and Missouri can be beneficiated and used may be determined by this investigation, which is to center at the Birmingham-Tuscaloosa station of the bureau.

At the Minneapolis station of the bureau many iron and steel studies are in progress. One deals with the effect of furnace lines on blast furnace operations and has as its goal the discovery of some fundamental principles which will assist the furnace designer. About 200 furnaces are relined each year, the bureau points out, but because there are no practical rules governing the best shape of the furnace the designer prefers to "stick to known troubles than accept the risk of a new design."

Another investigation at the Minneapolis station has to do with the effect of physical characteristics of the charge on blast furnace operation. Probably the greatest cause of the fundamental inefficiency of the blast furnace considered thermally as a furnace, states the bureau, "is due to the enormous disparity between the sizes of the particles of the solids charged. The average lump of coke has a volume of 400 to 800 cubic centimeters and a surface expected to the gas stream of 0.5 to 1 square centimeter per gram. The average ore particle, on the contrary, has a volume approximately 0.000005 and would expose a surface of about 300 square centimeters per gram to the gas stream if its surface were exposed to the gas stream. A study is being made of the effect on furnace operation of a mixture of solid particles one-third of which is one hundred million times the size of the other two thirds. In a number of cases furnace operators have improved furnace efficiency by sizing the coke charge. There are prospects of being able to continue such work on the sizing, not only of the coke but of the ore."

A study of the time rate of reduction of iron oxides by carbon monoxide also is under way at the Minneapolis station, as is a study of the properties of steel made in an electric furnace from sponge iron, the steel was furnished by the California Electric Steel Co., of Los Angeles. A study of the melting of sponge iron also is under way at the northwest station of the bureau at Seattle.

Will Install Novel Cold Rolling Equipment

The Worcester Pressed Steel Co., Worcester, Mass., has ordered a new tandem cold rolling mill of a design which is said to be unique. The mills are being built by the United Engineering & Foundry Co., Pittsburgh, and are to be shipped some time during the present month. Several novel features have been introduced into the design of these rolls. The adjustment will be by means of wedges instead of screws, a method which is expected to eliminate the lost motion and much of the inaccuracies of screw-type adjustment. The speed of the mills operated in tandem will be 201 feet per minute. Each mill will be separately driven by a 70-horsepower adjustable speed motor. A separate motor-driven coiling machine, which will be mounted on the mill, will produce tight small core coils for annealing or shipping, without the necessity of an extra coiling operation.

Enlarges Abrasive Plant

The Cleveland Abrasive Wheel Co., Cleveland, has enlarged its plant by adding a department for the manufacture of grinding wheels by the vitrified process. Previously the company employed the silicate and shellac processes only. According to J. R. Wild, president of the company, the vitrifying department was added to supply the demand for comparatively large wheels for both rough and precision grinding operations. The company uses artificial abrasives and aside from making grinding wheels for all purposes, it manufactures abrasive specialties such as scythe stones and knife sharpeners.

Start Work on Plant Extension

Sites Being Prepared for New Equipment at Plants of Subsidaries of Wheeling Steel Corp.—New Blooming and Wire Rod and Chain Stock Mills To Be Built—Remodel Sheet Plant

PLANT improvements, which are to be carried out this year by the subsidiary companies of the Wheeling Steel Corp., La Belle Iron Works, Steubenville, O., and the Whitaker-Glessner Co., Portsmouth, O., Wheeling and Beech Bottom, W. Va., as announced in the Jan. 29 issue of THE IRON TRADE REVIEW, now are under way. Contracts for part of the machinery and other equipment have been let; additional awards yet are to be made.

At the La Belle Iron Works, Steubenville O., the building which formerly housed a 16-inch skelp mill has been razed and there will be erected a group of buildings to house two additional rows of soaking pits, new gas producers, a 35-inch blooming mill and a 19-inch continuous sheet bar mill. These changes also will necessitate a new storeroom building and the removal of the hospital buiding to a new location. The blooming mill will be a 35-inch unit, contracts having been let to the Mackintosh, Hemphill Co., Pittsburgh, for this mill, together with manipulator. The blooming mill will be driven by a 4-cylinder, 36 x 60-inch reversing uniflow steam engine to be furnished by the Nordberg Mfg. Co., Milwaukee, and the adaptation of this type drive on a blooming mill is claimed to be the first ever attempted.

Auxiliary blooming mill equipment includes three new hydraulic intensified driven shears which will be built by the Morgan Engineering Co., Alliance, O. The 19-inch continuous sheet bar mill is being built by the Morgan Construction Co., Worcester, Mass. A uniflow steam engine will drive the various stands of sheet bar rolls through reduction gears and will be a duplicate of the blooming mill drive with the exception of the reversing mechanism. As far as can be ascertained this will be the first continuous mill installation to be driven by a uniflow engine. The roller tables in connection with the blooming mill are to be supplied by the Wheeling Mold & Foundry Co., Wheeling, W. Va.

Steel capacity at the open-hearth department of the La Belle Iron Works will be increased by the installation of McKune type burners which will be supplied by the Blaw-Knox Co., Pittsburgh. Improvements at the open-hearth department also include two new 125-ton ladle cranes. In order to carry out these improvements it will be necessary to make some changes in the present open-hearth building in the way of additional tracks, strengthening of building columns, etc.

Electrical equipment at the Steubenville works also will be increased by the addition of two 1000-kilowatt generators. These will be built by the General Electric Co., Schenectady, N. Y., and will be driven by duplex steam engines of the uniflow type furnished by the Nordberg Mfg. Co., Milwaukee. Additional boilers will be installed to supply steam for the generator drives.

At the Portsmouth, O., works of the Whitaker-Glessner Co. the extension program involves a complete new plant, including a continuous wire rod and chain stock mill in addition to wire drawing equipment. The rod and chain stock mill will be built by the Morgan Construction Co., Worcester, Mass. Contracts for the main drive motors have been placed with the General Electric Co., Schenectady, N. Y., and include one 2800-horsepower and three 800-horsepower units. This company will also furnish a 3000-kilowatt, three-unit motor generator set and a 750-kilowatt motor generator set, complete with switchboards and the necessary control equipment. About 60 per cent of the foundation work is completed. Considerable ground has yet to be filled in and this gradually is being done.

A new power plant including four 829-horsepower boilers is practically completed at the Wheeling plant of the Whitaker-Glessner Co., Wheeling, W. Va. The boilers, which will be operated with forced draft, were built by the D. Connelly Boiler Co., Cleveland. There are two 600-kilowatt Westinghouse generators driven by Nordberg uniflow engines in this power house, which will furnish current for the factories and mills at the Wheeling plant of this company. A water softening plant of 27,000 gallons per hour capacity has just been completed, this plant being built by the International Filter Co., Chicago, to furnish purified water to the new boilers.

The original sheet mills and furnaces at the Whitaker plant, Wheeling, W. Va., of the Whitaker-Glessner Co., are being rearranged into two trains of six hot mills each, driven by a 24 x 42-inch duplex uniflow engine. New mill foundations and shoes and sheet and pair furnaces are being installed. About one-half of the work is completed and the mills entailed are expected to be placed in operation in the near future. The sheet and pair furnaces are of the Costello type and were furnished by the Tate-Jones Co., Pittsburgh. They are designed for burning powdered coal. The sheet bars will be delivered to the furnaces by a traveling crane. Work of rebuilding the second half of the mill along similar lines now is under way.

At the Beech Bottom Works, Beech Bottom, W. Va., of the same company a building is being erected to house a new galvanizing department to include four pots.

Union Steel Casting Buys Pittsburgh Rolls Stock

The Union Steel Castings Co., Pittsburgh has purchased at private sale a large block of capital stock in the Pittsburgh Rolls Corp., that city. The plants of both companies are in the Lawrenceville district. The Union Steel Castings Co. in making this purchase, will make no changes in the local organization or management of the Pittsburgh Rolls Corp., other than certain directors who will be retired by reason of the purchase will be replaced by officers of the Union Steel Castings Co.

The plant of the Pittsburgh Rolls Corp., has operated in the same locality for over 50 years. It was first under the name of Bowman, Boyd & Bagley, then as James B. Young & Co., and later as Seaman, Sleeth & Co., who operated it for a great many years, being succeeded in 1917 by the Pittsburgh Rolls Corp. During these changes the plant has been known as the Phoenix works. The present officers are D. L. Eynon, president; Q. S. Snyder, vice president and treasurer; and P. M. Fleming, secretary.

The Union Steel Castings Co. was organized in 1899, and has grown to be one of the leading steel foundries in the country. The officers are C. C. Smith, chairman; J. P. Allen, president; J. B. Henry, vice president and general superintendent; S. H. Church, vice president; G. W. Eisenbeis, treasurer; and W. C. Eichenlaub, secretary.

Late News of the Societies

Notes on Past and Coming Meetings of National and Local Trade and Technical Organizations

ENGINEERS, economists and executives will take part in the meeting of the Taylor society, which will be held in Philadelphia at the City club, March 16 to 18. At the Thursday afternoon session John M. Holcombe Jr., manager of the sales research division of the Phoenix Mutual Life Insurance Co., Hartford, Conn., will present a report on investigations in sales research. This session will be followed by a dinner. Richard A. Feiss, Joseph & Feiss Co., Cleveland, will preside at the Thursday evening session, at which Henry P. Kendall, of Boston, will explain "The Problem of the Chief Executive." Joseph H. Willits, of the Wharton school, University of Pennsylvania, will preside at the Friday morning session. Frank B. and L. M. Gilbreth, consulting engineers, of Montclair, N. J., will present a paper on super-standardization. They will discuss the reasons for standardization and outline progress in Europe and in the United States. Conrad H. Lauer, of Day & Zimmerman, Philadelphia, will preside at the Friday afternoon session at which George E. Frazer, of Chicago, will deliver an address on "Budget Control." Arthur Pound, of Flint, Mich., will talk on "Mills and Minds" at the Friday evening session, presided over by Robert B. Wolf, of New York. The concluding session of the meeting will be held Saturday morning. Two papers in the field of operating technique will be presented at this session at which William M. C. Kimber, of Philadelphia, will preside. Percy Brown, of the Corona Typewriter Co., Groton, N. Y., will discuss "String-Board Graphics" and Thomas W. Mitchell, of Philadelphia, will speak on "The Work of the Balance of Materials Clerk."

* * *

Gear Makers Will Convene

The American Gear Manufacturers' association this year will hold the sixth annual convention at Buffalo, N. Y., with headquarters at the Lafayette hotel. The dates have been fixed at April 20 to 22.

* * *

Tool Builders to Meet

Announcement has been made recently that the spring convention of the National Machine Tool Builders' association will be held in Atlantic City, April 25 and 26. The Traymore hotel has been selected as the convention headquarters.

* * *

To Discuss Precision Grinding

Precision in modern tool work will be discussed at a joint meeting of the Boston section of American Society of Mechanical Engineers and other Boston engineering society chapters on March 28. Major W. E. Hoke will preside. The Pratt & Whitney Co., Hartford, Conn., will have an exhibit showing the latest developments in precision measurement instruments and equipment.

* * *

Engineer Registration Explained

"Registration as Professional Engineers and Land Surveyors" was the subject of a lecture given by R. L. Humphrey, chairman of the Pennsylvania state board of registration of professional engineers and land surveyors, Harrisburg, Pa., at a joint meeting held Tuesday, March 14, in the William Penn hotel, Pittsburgh. Members of the practicing engineers section of the Engineers' Society of Western Pennsylvania met with the civil section of that body on the occasion of the civil section's bi-monthly meeting.

* * *

Ohio Section Plans Meeting

Arrangements are being made for a meeting of the Ohio section of the American Institute of Mining and Metallurgical Engineers, to be held at the Winton hotel, Cleveland, March 24. Benedict Crowell, former assistant secretary of war, will speak on the practical application of aviation. Motion picture films from the war and navy department will be exhibited. Officers will be elected for the following year. The following names have been submitted by the nominating committee: Chairman, Zay Jeffries; vice chairman, C. H. Munger; vice chairman, F. R. Van Horn; secretary and treasurer, G. B. Murray. The proposed directors are L. E. Wempe, H. T. McCleary, H. E. Wetherbee.

Convention Calendar

March 16-18—Taylor society, midwinter meeting, City club, Philadelphia. H. S. Person, 29 West Thirty-ninth street, New York, is managing director.

April 4-7—American Chemical society, spring meeting, Birmingham, Ala.

April 17-20—National Metal Trades association, annual convention at the Astor hotel, New York. Louis D. Fischer, Peoples Gas building, Chicago, is secretary.

April 20-22—American Gear Manufacturers association, annual meeting, Hotel Lafayette, Buffalo, N. Y. F. D. Hamlin, 4707 Stenton avenue, Philadelphia, is secretary.

April 24-26—American Supply and Machinery Manufacturers' association joint meeting with the Southern Supply and Machinery Dealers' association at the Tutweiler hotel, Birmingham, Ala. F. D. Mitchell, 4106 Woolworth building, New York, is secretary of the first mentioned society.

April 25-26—National Machine Tool Builders association, spring convention at the Traymore hotel, Atlantic City. Ernest F. DuBrul, Provident Bank building, Cincinnati, is general manager.

April 27-29—American Electrochemical society spring meeting in Baltimore.

May 4-5—Iron and Steel Institute, annual spring meeting at the Institution of Civil Engineer's building, London. George C. Lloyd, 28 Victoria street, London, S. W. 1, is secretary.

May 8-11—American Society of Mechanical Engineers, spring meeting at Atlanta, Ga. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

May 10-13—National Foreign Trade council, ninth national convention, Philadelphia. O. K. Davis, 1 Hanover Square, New York, is secretary.

May 15-20—National Association of Purchasing Agents, seventh annual convention, also exposition at Exposition park, Rochester, N. Y. H. R. Heydon, 19 Park place, New York, is secretary.

May 23-25—American Iron, Steel and Heavy Hardware association annual meeting, Hotel Washington, Washington. A. H. Chamberlain, Marbridge building, New York, is secretary.

May 25-26—American Society for Steel Treating, sectional meeting, Pittsburgh. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

June 5-9—American Foundrymen's association annual convention and exhibition at Exposition park, Rochester, N. Y. C. E. Hoyt, Marquette building, 140 South Dearborn street, Chicago, is secretary.

June 26-July 1—American Society for Testing Materials, twenty-fifth annual meeting, Chalfonte-Haddon Hall hotel, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

Sept. 11-15—Association of Iron and Steel Electrical Engineers, 1922 convention at the new auditorium, Cleveland. John F. Kelly, Empire building, Pittsburgh, is secretary.

Steel Foundries Report Shows Small Earnings

Net profits of $675,009 after charges and federal taxes were reported by the American Steel Foundries Co., Chicago, for the year 1921. This, after allowing for the usual preferred dividend was equal to 13 cents a share on $20,401,000 common stock. In 1920 the company reported profits of $4,496,442 or $6.37 a common share. A comparison of the income accounts for 1920 and 1921 follows:

	1921	1920
*Operating earnings	$1,428,187	$6,915,734
Depreciation	512,734	669,238
Balance	$ 915,453	$6,246,496
Other income	325,885	424,498
Total increase	$1,241,338	$6,670,994
Subsidiary earnings	284,261	322,374
Interest, charges, etc.	156,042	†602,578
Federal tax reserve	126,026	1,249,600
Net profit	$ 675,009	$4,496,442
Preferred dividends	593,691	593,691
Common dividends	1,836,090	1,616,159
Deficit	$1,754,772	‡$2,286,592

*After deducting manufacturing, selling and administration expenses. †Includes $322,373 loss on securities sold. ‡Surplus.

In his report to stockholders, R. P. Lamont, president of the company, stated the outstanding features of business during the year were liquidation and readjustment. As bearing more directly on the affairs of the company he stated that it is sufficient to note that freight cars ordered for domestic service during 1921 totaled 23,346, which is the smallest number ordered in any one year in 20, with the exception of 1919. At the same time expenditures for railroad maintenance in the first 10 months of 1921 were $473,000,000 less than in the corresponding months of 1920. As the bulk of the company's business comes from the railroads, Mr. Lamont pointed out, the results of the company's operations during the year reflect the small railroad car and maintenance expenditures.

"Under existing conditions, it is difficult to forecast the results of operations for the current year," Mr. Lamont said. "The bad foreign situation, the depression in general business, the lessened buying power of the farmer, and the extraordinarily large number of idle cars and locomotives, seem to indicate another year of limited demand for the things we make. On the other hand, in the last three years, the number of freight cars bought averages about 43,000, whereas the average number bought for the years 1901 to 1918, inclusive, is 161,043 per year. Undoubtedly a great number of idle cars are not in good condition. The officials of the railroads realize that a return to normal business would find them short of the necessary equipment and those financially able seem inclined to get ready to handle the larger volume of traffic which will come sooner or later. While general business will no doubt be moderate in volume, at any rate for the first half of the year, we hope that, based upon the known needs of the railroads, our business will be somewhat above the general average."

Court Appoints Receivers

Receivers have been appointed by the United States district court at Pittsburgh to take charge of the property of the Pittsburgh Steel Tube Co., engaged in the manufacture and sale of steel tubes at Beaver, Pa. They are Harry J. Lewis and Lewis C. Bardy. The bond was fixed at $5000. A petition states the company has assets of $223,243.36 representing the property, office furniture, automobiles and cash.

Inventory Loss Shown by Worthington Pump

A net loss of $188,630 in the year ended Dec. 31, 1921, is reported by the Worthington Pump & Machinery Corp., New York. This is after a charge of $1,999,579 for inventory adjustment. Before inventory losses, but after interest, depreciation and federal taxes, the company's net was $1,810,949. This figure compares with $2,030,923 in 1920. For the years 1921 and 1920 the income account of the company shows:

	1921	1920
Billings to customers	$17,335,854	$27,924,745
Cost of sales, deprec., etc.	15,791,544	25,898,443
Profit from manufacture	1,544,310	2,026,302
Gross income	1,908,977	2,355,858
Interest	68,028	24,935
Inventory adjustment	1,999,579	.....
Federal tax res.	30,000	300,000
Net loss	188,630	*2,030,923
Preferred A dividend	391,498	391,498
Preferred B dividend	619,300	619,300
Common dividend	649,607	747,129
Deficit	1,849,035	†272,996
Total surplus	2,776,699	4,625,734
‡Common dividend in advance	259,844	.....
Profit and loss surplus	2,516,855	4,625,734

*Income. †Surplus. ‡For two quarters to June 30, 1922.

Bucyrus Earnings Fall

Net earnings of $445,905 after taxes and depreciation are reported for 1921 by the Bucyrus Co., Milwaukee. This compares with $1,010,984 in 1920. The year's surplus after dividends was $145,905, compared with $530,984 in the preceding year, and the profit and loss surplus $3,259,511 against $3,113,606 at the close of 1920.

Profits in 1921 Drop

The annual report of the Yale & Towne Mfg. Co., Stamford, Conn., for 1921 shows net profits of $1,269,214, which is the equivalent of $25.39 a share on $4,998,774 of capital stock. This compares with earnings of $46.51 per share in 1920.

Report of Superior Steel Shows Net Loss

A net loss of $273,395 for 1921, after expenses and depreciation, is reported by the Superior Steel Corp., Pittsburgh. This compares with profits in 1920 of $1,022,820 after all expenses. The deficit for 1921, after deductions for sinking fund and dividend requirements, was $1,115,373, which compares with a surplus of $205,547 in 1920. A comparative statement for the two years follows:

	1921	1920
Gross sales	$2,286,561	$12,746,805
*Gross manufacturing profit	†307,771	3,471,761
Other income	76,914	23,130
Gross income	$ 230,857	$3,494,891
Expenses, taxes, etc.	42,538	526,908
Inventory adjustment	.....	311,132
Federal taxes	.....	1,634,031
Net loss	$ 273,395	*$1,022,820
Dividends	409,570	652,273
Sinking fund	432,408	165,000
Deficit	$1,115,373	‡‡ 205,547
Profit and loss surplus	278,399	864,498

*After depreciation. †Loss. ‡Profit. ‡‡Surplus.

"This is the first report since our organization that does not show very favorable reports for operations during a twelve months' period," said E. W. Harrison, president of the company, in his annual report. " The past year has been more trying for the industrial world and for the steel business in particular than any that has preceded it. We are starting the new year with no surplus stock of raw material, business is improving nicely and although prices are unreasonably low yet the outlook is promising and while it will probably be months longer before business conditions get near normal, yet we think, the year 1922 will show satisfactory results. We have been careful to cut our overhead expense in a very pronounced way and every economy possible will be practised. The indications are that we are now entering a prosperous period."

New York Air Brake Net Shows Loss in 1921

In the year ended Dec. 31, 1921 the New York Air Brake Co. shows a net loss of $458,699 after charges and taxes. This compares with net profits of $751,860 in 1920 which was equivalent to $7.51 a share on the $1,000,000 capital stock. The income accounts of the two years compare as follows:

	1921	1920
Sales	$2,434,744	$6,545,846
Manufacturing costs	1,975,079	4,796,602
Manufacturing profits	459,665	1,749,244
Other income	48,114	30,071
Total income	507,779	1,779,315
Expenses, taxes, etc.	490,765	475,615
Interest	475,713	481,840
Federal tax, etc.	.....	70,000
Net loss	458,699	*751,860
Dividends	375,000	973,877
Deficit	833,699	222,017
Previous surplus	4,047,628	6,054,167
Total surplus	3,213,929	5,832,150
Special depreciation	955,509	.....
Contingent reserve	.....	250,000
Adjustment	800,963	1,534,522
Profit and loss surplus	1,457,457	4,047,628

*Profit.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

E. G. RIPPEL, sales manager of the Buffalo Foundry & Machine Co., Buffalo, has withdrawn from the company and temporarily will retire from all business activity. About 21 years ago. Mr. Rippel organized the Buffalo Foundry Co., then capitalized at $10,000, and from this small beginning the plant has been expanded into one of the largest foundries in the world engaged in the manufacture of castings for chemical plants. As the business of this corporation expanded, the name of the company was changed to that of the Buffalo Foundry & Machine Co. Mr. Rippel particularly made a study of the application of chemistry to foundry methods and employed this principle to conspicuous advantage in the development of his business. He was one of the first to produce successfully a commercial semisteel from a chemical basis. Mr. Rippel has been succeeded as sales manager by C. W. Pearson, assistant treasurer.

C. A. Washer has been appointed general coal and ore agent at Cleveland for the New York Central railroad.

Noel Cunningham, formerly with the Coal Washing Equipment Co., has become associated with the Hardinge Co., Inc., 120 Broadway, New York.

W. S. Pilling, Pilling & Co., Real Estate Trust building, Philadelphia has returned from a month's stay in Florida.

Guy E. Tripp, chairman of the Westinghouse Electric & Mfg. Co. returned March 6 from a trip to Europe and the Near East.

F. A. Welling, 88 Fenchurch street, London, Eng., has been appointed British representative of Jones & Laughlin Steel Co., Pittsburgh.

Col. C. C. Chambers, sales manager of the E. F. Hauserman Co., Cleveland, steel sash, partitions, etc., has been appointed reserve officer of the army general staff at Washington.

H. H. Cudmore has been elected vice presidnt of the Metropolitan Bond Co., Chicago, and has been placed in charge of the Ohio sales offices, 311 Bulkley building, Cleveland. He formerly was president of the Argus Enterprises, Inc., Cleveland, and has been in charge of the lamp division of the General Electric Co.

Oswald Fowler of Rogers, Brown & Co., New York, has returned from a trip to England, Norway and Sweden where he studied conditions in the aluminum industry.

Warren H. Rideout, for the past

E. G. RIPPEL

17 years paymaster at the Fore River yards, Quincy, Mass., of the Bethlehem Shipbuilding Corp., Ltd., has been appointed city treasurer of Quincy.

John F. Hazen, for several years connected with the sales end of the Pittsburgh Steel Co., Pittsburgh, in various capacities, has been appointed assistant general manager of sales.

H. H. Frank, formerly with the Pittsburgh office of the Concrete Steel Co., now is Pittsburgh district representative of the Marsh-Capron Mfg. Co., Chicago, manufacturer of concrete mixers.

W. M. Corse, general manager of the Monel Products Corp., Bayonne, N. J., has tendered his resignation to take charge of the division of research council, Washington, effective about April 1.

H. L. Willson, former vice president and general manager of the Columbia Graphophone Mfg. Co., Bridgeport, Conn., has succeeded Van Horn Ely as its president and will continue as general manager.

J. J. Perosi, formerly in charge of sales of the steel drum department of Garrigues, Inc., New York, has been made manager of offices opened at 165 Broadway, New York, by the Welded Steel Barrel Corp., Detroit.

Edgar T. Glass, for the past few years sales manager of the tractor division of the New Britain Machine Co., New Britain, Conn., has resigned. He was formerly with the Stanley Works in that city.

Norman W. Foy has been named acting Buffalo representative of the Republic Iron & Steel Co. in place of William J. McClain who has entered the new brokerage firm of Waldo, Egbert & McClain.

Stanley Sheldon, for the last five months manager of the Murlless Foundry, Rockville, Conn., has resigned to become a department manager in a Paterson, N. J., wholesale hardware company.

Samuel E. Duff, consulting engineer, Pittsburgh, has been elected president of the Memphis Steel Construction Co., Magee building, that city. For some time past he has been that company's consulting engineer. He succeeds C. A. Hunt.

Henry J. Kranz, for the past 15 years representing the Carnegie Steel Co., the Illinois Steel Co. and the Tennessee Coal, Iron & Railroad Co. in Kansas and Oklahoma, became associated with Laclede Steel Co., St. Louis, effective March 1.

Samuel Lewis Smith, vice president of the National Malleable Castings Co., Cleveland, is now in Great Britain on a business trip. Mr. Smith has extended his stay and now expects to return to the United States some time in March.

F. J. Carrigan, who for many years has been foundry foreman for the Nevada Consolidated Copper Co., McGill, Nev., has purchased the Cottage Grove Iron & Brass Foundry, Cottage Grove, Oreg., from James Feeny.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ROBERT C. STANLEY, who recently was elected president of the International Nickel Co., is taking his new position with the responsibility of finding new uses for nickel. This is a particular need because of the effect of the disarmament agreement upon the consumption of nickel in armor plate. The company's development work will be consolidated and directed intensively. Mr. Stanley has spent his entire business career with the International Nickel Co. He became assistant superintendent of the American Nickel Works at Camden, N. J., when that company was taken over from Joseph Wharton on the formation of the International Nickel Co. in 1902. He subsequently became superintendent in charge of that plant and his next step was to become assistant general superintendent of the refinery at Constable Hook, N. J., later becoming general superintendent. In 1918 Mr. Stanley was made first vice president of the company, in full charge of all operations in this country and Canada. He was elected president March 1. He was graduated from Stevens institute in 1899 with the degree of mechanical engineer and from Columbia school of mines in 1901.

Harold M. Kenyon has been elected president and treasurer, and Carlyle C. Thomson secretary of the Kenyon Bearings Co., Hartford, Conn.

Wallace T. Montague, assistant sales manager of the grinding wheel division of the Norton Co., Worcester, Mass., has been transferred to the grinding machine division of the company in the same capacity.

John F. Tinsley, vice president and general manager, and Irving H. Verry, vice president in charge of sales, both of the Crompton & Knowles Loom Works, Worcester, Mass., returned recently from a two months European trip.

Col. H. Cockshutt, lieutenant governor of Ontario, has resumed the presidency of the Cockshutt Plow Co., Brantford, Ont., made vacant by the death of George Wedlake. E. A. Mott, who has been with the company for 32 years, has been appointed first vice president and general manager.

S. C. Stockwell of the New Departure Mfg. Co., Bristol, Conn., has been elected president of the West Hartford Manufacturers' association, West Hartford, Conn. C. H. Abbott of the Abbott Ball Co., is secretary and H. Herbinson of the Hartford Tube Products Co., is treasurer.

Leonard Smith, for many years treasurer of the American Laundry Machinery Co., Cincinnati, has retired from active connection with the company but will remain as a member of the board of directors. Robert Burton, president of the company, has been given the additional duties of treasurer.

JOHN McCONNELL
Who has returned to the United Alloy Steel Corp., Canton, O., as vice president in charge of operations

Samuel R. Robinson has resigned as foundry superintendent of the Sandusky Foundry & Machine Co., Sandusky, O., to become metallurgist with the Lorain Steel Foundry Co., Lorain, O. Previously Mr. Robinson had been metallurgist for the Philadelphia Roll & Machine Co., Philadelphia, and the Duquesne Steel Foundry Co., Coraopolis, Pa.

Charles S. Vought, vice president and European representative of the American Steel Export Co., New York, who has just returned from a trip around the world, has joined the sales force in the New York office of the Donner Steel Co., Inc., 120 Broadway, New York. Mr. Vought received his early training in the steel industry with the Cambria Steel Co., Johnstown, Pa.

W. M. Orr, sales manager of the Thomas R. Heyward Co., Pittsburgh, resigned recently to form his own company for the purpose of selling iron, steel, alloys, copper and brass. The name of the new company is the W. M. Orr Co., and headquarters until May 1 have been established at 1635 Oliver building, Pittsburgh. Prior to becoming affiliated with the Thomas R. Heyward Co., Mr. Orr was connected with the Carnegie Steel Co.

William C. Downs, general representative of the United States Steel Products Co., Rio de Janeiro, Brazil, is making a trip to Great Britain and the Continent before returning to his post at Rio de Janeiro early in April.

Norman Van Voorhis of the Galusha Stove Co., Rochester, N. Y., has been appointed general chairman to head an executive committee of eight Rochester business men to have charge of the local arrangements for the American Foundrymen's association convention to be held there the week of June 5.

W. G. Maguire has been elected first vice president of the American Coke & Chemical Co., in executive charge of the company's affairs, succeeding Arthur Roberts. Mr. Maguire has also been appointed a member of the executive committee of the National Enameling & Stamping Co., control of which recently passed to interests owning the American Coke & Chemical Co.

William B. Price, recently elected chairman of the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers, long has been a prominent figure in the field of practical and scientific metallurgy. After graduating from the Sheffield Scientific school at Yale he became connected with the Scovill Mfg. Co., Waterbury, Conn., and since that time, for 20 years has been the chief chemist and metallurgist for that company. Among his extensive contributions to technical literature, perhaps the best known is his *Technical Analysis of Brass and Nonferrous Alloys.*

Industry in Northwest Reviving

Steel Foundries Experiencing Fairly Good Business—Railroad Buying Equipment—Public Construction Work Increasing—Union Labor Replaced in Coal Mines—Shipbuilding Costs Still 35 Per Cent Above 1913

Special Correspondence

SEATTLE, March 9.—General business conditions in the Northwest are improving. Railroad extensions or betterments are either under way or contemplated, much public work is being done, and many sizable building contracts are soon to be awarded.

Seattle building permits for January and February totaled $2,417,835, an increase of nearly 100 per cent over the same months in 1921.

Seattle bank clearings advanced from $217,964,510 in the first two months of 1921 to $245,367,453 for January and February, 1922.

The peak of unemployment has passed. The call for labor has increased and many factories throughout the state have resumed operations, some of them having sufficient work for several months. Others are contemplating maximum production within 60 or 90 days. The Alaska canneries are preparing for a normal pack. A few miners have found work in Alaska, although that industry is still inactive. There will be a limited call for labor on the Alaska railroad this year as construction work is about completed.

Foundry operations still average 50 per cent of capacity and there is no lack of labor. The steel foundries have had a fairly good business in the last 90 days. The gray iron plants have been practically idle though business is more promising now.

In the coal mines producing coal for domestic use, the operators have successfully replaced union miners, nearly all aliens, with nonunion men. The latter are working six days a week and producing more per man than the former employes. In the mines in eastern Washington, owned and operated by the railroads, the union scale expires April 1, and there will be a readjustment, but no trouble is anticipated.

Logging and lumbering have furnished most of the demand for machinery and equipment during the last three months, but other lines are showing more activity and wholesalers, as well as foundries and machine shops, are anticipating an early increase in their business.

Reports from eastern Washington, where about 90 per cent of last year's wheat crop has been sold, are encouraging. Farmers are pleased over the recent rise in the price of wheat and the prospects for good crops this year are excellent.

Ships and repair yards have had a quiet winter but spring work has started. Bids recently opened at San Francisco for an express passenger steamer for the Inter-Island Navigation Co., Honolulu, showed figures about 35 per cent higher than in 1913 and 75 per cent lower than during the higher prices of the war. The lowest bid was submitted by the Sun Shipbuilding Co., $1,027,000. The Bethlehem Shipbuilding Corp., San Francisco, bid $1,199,350, and the Todd Dry Dock & Construction Corp., Tacoma, $1,350,000. Some of the San Francisco bay ship repairs plants have cut their drydocking charges 20 per cent.

In addition to building about 30 miles of new main line track in eastern Washington, the Great Northern railway will spend $1,500,000 in installing new terminals at Wenatchee, Wash. and will also spend $2,000,000 for new steel coaches and equipment. This is part of a $15,000,000 betterment program. The Northern Pacific will spend, $350,000 in improvements at its South Tacoma shops.

The state of Washington this month will receive bids on a $3,000,000 contract for a unit of the capital buildings.

Bids for contracts involving $3,500,000 will be opened in the city of Seattle during March. These include 17 miles of steel riveted pipe requiring more than 12,000 tons of plates. The municipality is also in the market for 200 street cars. City officials are plannings to construct them in the city's shops. The Pacific Car & Foundry Co. has offered to build them at its Renton shops on a basis of cost plus 10 per cent.

New construction work in Seattle includes a six-story fireproof office building to cast $500,000 and an 11-story concrete apartment hotel building estimated at $750,000. Plans are being prepared for a $250,000 concrete apartment house. The navy department is to build a concrete pier and seawall at the Puget Sound yard and the Alaska engineering commission is calling for bids for the largest steel bridge on the entire route of the Alaska railroad requiring about 3000 tons of steel.

Prices Steady

In the By-Products Market—Trading Lively in Toluol

New York, March 11.—Benzol continues strong, but unchanged. Pure benzol is quoted at 27 to 29 cents, f.o.b. works, in tanks, and 32 to 35 cents in drums, while 90 per cent benzol is holding at 25 to 27 cents, f.o.b. works in tanks, and 30 to 32 cents in drums. Foreign demand has fallen off, but domestic inquiry is maintained.

While demand for toluol and solvent naphtha normally is never of the volume there is for benzol, a good amount of business is reported in both these products at the present time. Spot material as a result is scarce. Prices are holding steadily at 28 to 30 cents, f.o.b. works in tanks, and 33 to 35 cents in drums, for toluol, and 25 cents in tanks, f.o.b. work and 28 to 30 cents in drums, for solvent naphtha.

Little buying is reported in the sulphate of ammonia market. However, prices are firm at $2.60 to $2.65, f.o.b. works, as sellers are generally well booked up over the next two months.

Dullness prevails in naphthalene, with little revival expected before the latter part of this month or the first of April, at which time there usually is some buying to cover last minute requirements.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants in Tank Lots

Pure benzol	$0.27 to $0.29
Toluol	.28 to .30
Solvent naphtha	.25

Per Pound at Producers' Plants

Phenol	$0.15
Naphthalene, flake	.07 to .08
Naphthalene, balls	.08 to .09

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$2.60 to $2.65

(Prices on spot sulphate also quotable on business for delivery over next several months.)

Contract

Pure benzol	$0.27 to $0.29
Toluol	.28 to .30
Solvent naphtha	.25

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09

Per 100 Pounds at Producers' Plants

Sulphate of ammonia (12 months)	nominal

1921 Pig Iron Declines Sharply

Total of 16,688,126 Tons Only 45 Per Cent of 1920 Output and Only Slightly Better than 1908 Low Point—According to Official Record—Charcoal Iron Aggregates But 94,730 Tons

PRODUCTION of pig iron in the United States during 1921 totaled 16,688,126 gross tons, according to official figures which have been put forth by the American Iron and Steel institute. This represents a loss of 20,237,861 tons from the 36,925,987 tons made in 1920; in other words, the 1921 total represented but 45 per cent of the output of the previous year. It is interesting to note also that the 1921 production was but 752,108 tons better than the 15,936,018 tons in 1908 which was the low point of the country since 1901. During the first half, production totaled 9,530,981 tons but during the second half, it fell to 7,157,145 tons a drop of 2,373,836 tons. Of the 1921 total, 7,753,071 tons was basic iron, 5,595,215 tons bessemer, 2,568,136 tons foundry, 457,340 tons malleable, 112,748 tons forge and 201,616 tons, all other grades.

In subdividing production the institute reports 12,960,107 tons made for the maker's use, while the balance of 3,728,019 tons was made for sale. This represents the proportion of 77.7 per cent nonmerchant and 22.3 per cent merchant iron. Corresponding figures for 1921 were 71 per cent nonmerchant and 29 per cent merchant. The 1919 proportion was practically the same as 1920. It is evident, therefore, that nonmerchant production gained 5 per cent at the expense of merchant.

Based upon the fuel used in production, 16,579,653 tons was made with coke including ferroalloys made with electricity; 13,743 tons was made by anthracite, including mixed anthracite and coke pig iron; and 94,730 tons with charcoal. Pig iron made by coke represented 99.4 per cent of the total, in 1920 the coke iron production represented 98.4 per cent.

Charcoal pig iron with only 94,730 tons showed a falling off of 228,666 tons from the 323,396 tons produced in 1920. Of the total charcoal iron made during 1921 but 350 tons was made by the cold-blast method, the remaining 94,380 tons being contributed by the hot and warm-blast method. The output of ferromanganese and spiegeleisen totaled 160,178 tons, of which 103,755 tons was ferromanganese and 56,423 tons, spiegeleisen. During 1920 the ferromanganese and spiegeleisen output totaled 406,896 tons, of which 295,447 tons was ferromanganese and 111,449 tons, spiegeleisen.

According to the operating statistics, on June 30 76 furnaces were in blast, while on Dec. 31, 125 out of the total of 450 were active. At the close of the year only 27.8 per cent of the furnaces of the country was in blast. By comparison, at the end of 1920, 216 out of 452 were operating representing approximately 48 per cent. The figure for the end of 1919 was 61.8 per cent. The accompanying tables, as compiled by the institute, show pig iron statistics for 1921 classified according to use and the fuel used.

PRODUCTION OF COLD AND HOT AND WARM BLAST CHARCOAL PIG IRON, 1917-1921.

Kinds of iron.	1917.	1918.	1919.	1920.	1921.
Cold blast	5,219	4,209	2,113	1,734	350
Hot and warm blast	371,306	344,668	324,984	321,662	94,380
Total.....Gross tons.	*376,525	*348,877	327,097	323,396	94,730

* Includes small tonnage made with charcoal and coke mixed in 1917 and 1918.

TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

States.	Blast furnaces. In blast June 30, 1921.	Blast furnaces. December 31, 1921. In.	Out.	Total.	Production—Gross tons. (Includes spiegeleisen, ferro-mang., ferro-silicon, ferro-phosphorus, etc.) First half of 1921.	Second half of 1921.	Total,* 1921.
Coke*	74	121	295	416	9,448,223	7,131,430	16,579,653
Anthracite†	0	0	6	6	12,823	920	13,743
Charcoal	2	4	24	28	69,935	24,795	94,730
Total	76	125	325	450	9,530,981	7,157,145	16,688,126

*Includes ferro-alloys made with electricity, electricity and coke, etc.
†Includes mixed anthracite and coke pig iron.

PIG IRON MADE FOR SALE OR FOR USE OF MAKERS IN 1921.

Grade.	For sale.	For maker's use.	Total. Gross tons.
Basic	568,843	7,184,228	7,753,071
Bessemer and low-phosphorus	406,045	5,189,170	5,595,215
Foundry, including ferro-silicon	2,316,839	251,297	2,568,136
Malleable	350,682	106,658	457,340
Forge or mill	35,052	77,696	112,748
Ferro-manganese	24,253	79,502	103,755
Spiegeleisen	5,745	50,678	56,423
All other grades	20,560	20,878	41,438
Total.....Gross tons.	3,728,019	12,960,107	16,688,126

PRODUCTION OF PIG IRON BY GRADES, 1906–1921.

Years.	Basic.	Bessemer.	Foundry.	Malleable.	Forge.	All other.	Total. Gross tons.
1906.	5,018,674	13,840,518	4,773,011	699,701	597,420	377,867	25,307,191
1907.	5,378,219	13,231,620	5,151,209	920,290	683,167	419,856	25,781,361
1908.	4,010,144	7,216,976	3,637,622	414,957	457,164	199,155	15,936,018
1909.	8,250,225	10,557,370	5,322,415	658,048	725,624	281,789	25,795,471
1910.	9,084,608	11,245,642	5,260,447	843,123	564,157	305,590	27,303,567
1911.	8,520,020	9,409,303	4,468,940	612,533	408,841	229,910	23,649,547
1912.	11,417,886	11,664,015	5,073,873	825,643	469,183	276,337	29,726,937
1913.	12,536,693	11,590,113	5,220,343	993,736	324,407	300,860	30,966,152
1914.	9,670,687	7,859,127	4,533,254	671,771	361,651	235,754	23,332,244
1915.	13,093,214	10,523,306	4,843,899	829,921	316,214	309,659	29,916,213
1916.	17,684,087	14,422,457	5,553,644	921,486	348,344	504,779	39,434,797
1917.	17,671,662	13,714,732	5,328,258	1,015,579	345,707	545,278	38,621,216
1918.	18,646,174	13,024,966	5,145,260	1,117,914	393,932	726,398	39,054,644
1919.	14,494,131	9,975,934	4,916,758	1,009,049	271,286	348,206	31,015,364
1920.	16,737,722	12,062,084	5,957,782	1,310,951	318,048	539,400	36,925,987
1921.	7,753,071	5,595,215	2,568,136	457,340	112,748	201,616	16,688,126

Obituaries

HARRY FIRMSTONE, for 35 years president of the Longdale Iron Co., Longdale, Va., died in Philadelphia Saturday, March 11. He came of a family of iron masters as his father was one of the leading furnacemen of the Lehigh valley, the family home being at Easton, Pa. There were two brothers, Frank and Harry, both students of metallurgy and both men of great practical achievements. Frank Firmstone was for years head of the Cranberry Iron Co. The Firmstones shortly after the Civil war went to Longdale where they bought a tract of land. On the property was the remains of one of the old charcoal iron stacks whose history went back to Revolutionary days. The Firmstones on this property built two stacks which were up-to-date for that day and generation and these furnaces were operated up to comparatively recent years.

John J. Hogan, president of the Lowell Insulated Wire Co., Lowell, Mass., died at his home in that city, Feb. 26, after several months' illness, aged 65 years. He had been prominent in state and city affairs for nearly 40 years.

Solomon Shaw, well known in the Milwaukee foundry trade and inventor of numerous devices for improving molding practice, died recently after a brief illness at the age of 73 years. He was a native of England and came to America in 1868, being connected with iron and steel foundries in Milwaukee for more than 50 years.

Morris H. Thomas, purchasing agent of the Milwaukee plant of the National Enameling & Stamping Co., and connected with the business since 1892, died recently after a long illness. He was born in Milwaukee 51 years ago.

Edgar H. Cottrell, president and senior member of the C. B. Cottrell Printing Press Co., Westerly, R. I., died at his New York home, March 7, aged 72 years. He was in charge of the main offices of the company in New York.

Frank E. Cable, former secretary and treasurer of the Porter Cable Co., Syracuse, N. Y., builder of lathes, died March 6 at his home in Newton Center, Mass., where he had been living for the last two years. He was 66 years old. Because of failing health he retired from active business on moving to Massachusetts.

Abner Avery Bevin, president of the Bevin Bros. Mfg. Co., East Hampton, Conn., maker of bells, died at his home in that town, March 3, after an illness of two years, aged 79 years. His father was Abner G. Bevin, founder of the Bell Mfg. Co.

Senator John Milne, president of the Burrows, Stewart & Milne Co., Ltd., Hamilton, Ont., stove founder and scale maker, died March 4 in his eighty-fifth year. He was born in Aberdeen, Scotland, and went to Canada in 1854. He was one of the founders of the Steel Co. of Canada and was connected with other business enterprises.

George Wedlake, president and general manager of the Cockshutt Plow Co., Brantford, Ont., died March 3. He was 63 years old. He began life as a molder and rose steadily to the position he occupied at his death. His death was brought about by overwork in connection with his duties as mayor at Brantford.

Edwin Lucius Watson, president of the L. S. Watson Mfg. Co., and the Gibbs Heddle Co., both of Leicester, Mass., and the Hakes Mfg. Co., Millbury, Mass., all makers of wire heddles, died at his winter home in Pasadena, Cal., March 2, aged 82 years. When the L. S. Watson Mfg. Co. was incorporated in 1900 he became secretary and treasurer and upon the retirement of his father, Lory Sprague Watson, its founder, he was made president. His only son, Walter C. Watson, is treasurer and general manager of all three companies.

Walter C. Graves, president of the Graves Machinery Exchange, 50 Church street, New York, died recently in Richmond, Va., while enroute by automobile to Miami, Fla. Mr. Graves was born in Louisville, Ky., in 1875. Early in his career he was a salesman with the Wicks Machinery Co., Jersey City, N. J. He then severed this connection to establish the New York Machinery Exchange, with L. Bertolette, of the Bertolette Machine Tool Co., N. J. Mr. Bertolette later withdrew, and the company was reorganized under the name of the Co-Operative Machinery Exchange, with George Bennett and C. W. Pritchard as associates. Later Mr. Graves bought out the interests of Mr. Bennett and Mr. Pritchard and again reorganized the company, this time under the name of the Graves Machinery Exchange.

Col. William Converse Skinner, chairman of the Colt's Patent Fire Arms Mfg. Co., Hartford, Conn., died in Hartford, March 8, after an illness of several months, aged 67 years. His illness was preceded by a nervous breakdown. Col. Skinner became connected with the company in 1889, was elected a director and first vice president July 2, 1901 and president Jan. 5, 1909, succeeding the late L. C. Grover. Two years later he was made vice president and chairman of the board, serving until 1916, when he was again elected president to succeed the late Col. Charles L. F. Robinson. On May 19, 1921, he resigned again and again was made chairman of the board. He was a director in many corporations, including the Smyth Mfg. Co., Hartford, and Jay O. Ballard & Co., Malone, N. Y.

Elisha P. Douglass, aged 73 years, one of the founders 15 years ago of the McKeesport Tin Plate Co., McKeesport, Pa., and its vice president since that time as well as a director, died March 12 at St. Petersburg, Fla., after a brief illness. He went to St. Petersburg early in January and a week later became seriously ill. The cause of death was heart trouble. As an attorney, business man, and public service pioneer, Mr. Douglass was one of the best known men of McKeesport. He was a civic worker, an organizer of its first street car line, was connected with many of the city's business and financial institutions, and was its foremost philanthropist. He was born in Elizabeth township, Feb. 22, 1849. He taught school in Elizabeth and Rostraver townships, California Normal school, and Wooster college, from which he was graduated in 1877. He had practiced law in Pittsburgh and McKeesport since 1880 and was the senior member of the law firm of Douglass, Fife & Young. He was a trustee of the Wooster and Westminster colleges. He organized the Union Gas Co. Mr. Douglass' philanthropy extended over a large field. In the last two years he had given about $200,000 to the Wooster and Westminster colleges, the Y. M. C. A., the McKeesport Hospital, and the World Movement of the United Presbyterian Church.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

CONSOLIDATION of the Ewing Bolt & Screw Co., Detroit, and the Detroit Machine Co., of the same city has recently been effected according to an announcement by the first mentioned company. The Detroit Machine Co., builds machinery, dies, and tools but plans now under consideration provide for the sale of the property and for the construction of a new plant at River Rouge where the Ewing company owns property. Wood screws, bolts and rivets are manufactured by the Ewing company which has been in operation less than a year. Myles E. Ewing, president and J. A. Hale secretary and treasurer of the Ewing company now occupy the same position in the new company. David W. Pell has been made production manager at the Ewing plant. Directors of the organization are: Frank W. Blair; Arthur T. Waterfall; David W. Pell; A. N. Marion; Myles E. Ewing; J. A. Hale, all of Detroit; H. J. Douglas and David L. Rockwell, both of Cleveland.

* * *

IRON, steel, copper, brass and alloys are being handled by the W. M. Orr Co. 1635 Oliver building, Pittsburgh, which recently was formed by W. M. Orr who resigned as sales manager of Thomas R. Heyward Co., Pittsburgh.

* * *

GEORGE C. LEES and Harold S. Lees have purchased the Chase Steel Wool Co., Leominster, Mass., from Joseph B. Mulligan, and will resume operations in a factory at 42 Mechanic street, that city. The company was organized seven years ago, but has not been active since Mr. Chase's death.

* * *

THE American Hardware Corp., New Britain, Conn., at its annual meeting, elected the following officers: President, H. C. M. Thomson; first vice president, George T. Kimball; vice president, B. A. Hawley, C. H. Baldwin and C. B. Parsons; treasurer, I. D. Russell; assistant treasurer, William H. Booth; secretary, A. N. Abbe; assistant secretary, George P. Spear. The directors were re-elected.

* * *

OPENING offices for its own district sales, at 136 Liberty street, New York, the Whiting Corp., Harvey, Ill., manufacturer of foundry equipment, has discontinued its agency agreement with Wonham, Bates & Goode Trading Corp. which has represented the Whiting corporation in the East. The offices are in charge of J. Ross Bates who now is a vice president of the Whiting company. D. Poldetman Jr. will assist him in New York and R. C. Maley will be under Mr. Bates with an office at Springfield, Mass.

* * *

CONTINUING with the same management, policies and personnel the Ball Engine Co., now is operated under the name of the Erie Steam Shovel Co., Erie, Pa. The change is to provide a corporate title more in keeping with the output of the company as steam shovels are the only products manufactured. The department which made steam engines for power plants has been sold.

* * *

COMPLETION of the largest felt loom ever built in the world is announced by the Crompton & Knowles Loom Works, Worcester, Mass. It weighs 18 tons, weaves a fabric 40 feet wide and will require two flat cars to ship it. The shuttle travels 50 per cent faster than in an ordinary woolen loom, the rate of speed being 32 miles per hour. The loom is driven by two 2½-horsepower motors, one at each end. It will be used to make continuous tubular papermakers' felts to convey pulp in a paper machine to the drying rolls.

* * *

PROVISION for financing new construction and equipment needs were made at the annual meeting of the United States Tractor & Machinery Co. of Menasha, Wis. In addition to increasing the capital stock, it was voted to issue $250,000 in bonds. As soon as the frost is out of the ground, work will start on a new foundry and later on additional machine shops. Besides tractors and tractor tools the company intends to manufacture other power-driven farm machinery and the new buildings will make it possible to produce practically all parts under one roof. J. M. Robinson, formerly with the International Harvester Co., has recently become president and general manager of the Menasha company. G. D. Harris is vice president; A. B. Jensen, treasurer, and Joseph G. Sailer, secretary.

* * *

PURCHASE of the Great Lakes Lime & Stone Co., Rockport, Mich., has been made by the Kelley Island Lime & Transport Co., Cleveland. The transaction involved $1,250,000 for a cash consideration. The Great Lakes company has a crusher plant of 10,000 tons daily, loading docks on Lake Huron consisting of 32, 400-ton pockets and electrically-operated spouts, 19 miles of trackage, and other modern equipment. E. P. Smith, president of the company, its organizer and builder of its plants, will become affiliated with the Kelley Island company which will proceed with improvements planned by the Great Lakes company.

* * *

EFFECTIVE March 1, the corporate name of the Traders' Steel & Pipe Co. was changed to Sawhill-Moreland Co., Inc., and headquarters were removed from the Conestoga building to 2539 Oliver building, Pittsburgh. D. V. Sawhill, formerly in the sales department of the Youngstown Sheet & Tube Co., is president, and E. M. Moreland, formerly in the sales department of the Carnegie Steel Co., is vice president and secretary. This company handles a complete line of ferroalloys, raw, semifinished and finished steel products, specializing in pig iron, ferromanganese, ferrosilicon, fluorspar, bars, sheets, pipe and wire products.

* * *

OCCUPANCY of the new plant of the Builders Iron & Steel Co., now located at 262 Bridge street, East Cambridge, Mass., will take place not later than May 1. The new plant which has been erected on Garvey street, Everett, Mass., is a one-story building with a floor area of 70 x 200 feet. A 2-story office building is included in the property which comprises 56,000 square feet of land. The store house is 60 x 20 feet. A private railroad track serves the plant. The company which was incorporated in 1901 manufactures heavy hardware, bolts, nuts, rivets, cranes, and steel for buildings. Officers are: President, Howard P. Farmer; secretary, H. A. Buck; and treasurer, William J. Hoffman.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

INCORPORATION of the Ray P. Farrington Co., 1231 Land Title building, Philadelphia, is announced with Ray P. Farrington as president and W. W. Keefer II, secretary and treasurer. The company is selling agent in Philadelphia territory for the Follansbee Bros. Co., Pittsburgh, the Falcon Steel Co., Niles, O., and the Falcon Tin Plate Co., Canton, O. Mr. Farrington formerly was representative of the Newton Steel Co., Newton Falls, O.; the Republic Steel Package Co., Cleveland; the Wilson & Bennett Mfg. Co., Chicago; the Trumbull Steel Co., Warren, O.; and the Falcon Steel Co. Mr. Keefer formerly was sales manager at Cleveland for the Tacony Steel Co., and earlier had been associated with the Midvale Steel & Ordnance Co. The company handles sheet and tin mill specialties and later expects to add a line of hot and cold-rolled strip steel and cold-drawn steel.

* * *

PROPERTY of the Van Norman Machine Tool Co., Springfield, Mass., has been taken over by the Springfield Realty Corp., a holding company, the consideration being $186,000. The latter has bonded the property for $250,000 to provide working capital and fund the floating debt.

* * *

UNDER the firm name of Reeve-Fritts Co., Henry J. Reeve and James E. Fritts have combined to deal in machine tools in Chicago. Both men have been in the machine tool business in that city for a number of years with the H. A. Stocker Machinery Co. and the Stocker-Rumely-Wachs Co.

* * *

DAVID A. WRIGHT manufacturer and dealer in machine tools at Chicago, has incorporated the business bearing his name with $1,200,000 cap-000 common stock, under the firm style ital, $500,000 preferred stock and $700,- of David A. Wright, Inc. Mr. Wright has been in the business of manufacturing machine tools many years and incorporation of his company places it on a new basis.

* * *

THE York, Pa., plant of the American Foundry Equipment Co., 366 Madison avenue, New York, has been moved to more commodious quarters at East Market street, York.. This plant manufactures the company's molding machines, flasks, jackets and pattern mounting sundries. The sand cutting machinery, sand blast equipment and core machines will continue to be manufactured at the Chicago plant.

* * *

CONTRACT for the manufacture of a self bailing lifeboat has been taken by the Puget Sound Sheet Metal Works, Seattle, from the Self Bailing Life Boat Co., 507 Lyon building, Seattle. The boat is to be entirely of metal except seats, thwarts and gunwales. The parts are to be cut, quick assembly. Capt. B. E. Togersen is president of the boat company shaped, punched and made ready for and John Borges is vice president.

* * *

PLANT and equipment of the Aetna Steel Casting Co., Lorain, O., has been taken over by the newly incorporated Lorain Steel Foundry Co., capitalized at $250,000. This company is engaged in making plant improvements and will produce steel castings for steel works, rolling mills, railroads, automotive manufacturers and machinery builders. W. W. Davidson is president; W. D. Jones, vice president and secretary; and C. M. Hartzell treasurer and sales manager.

* * *

THE Dover Tank & Plate Co., Dover, O., capitalized at $24,000, is the name of the new company which has purchased the plant of the Acme Boiler Works, that city, formerly owned by Godfrey Smith. M. F. Fettel and Floyd Clay, of Youngstown, O., are promoting the new industry. The plant is being remodeled and placed in readiness for new machinery. The company will specialize in the manufacture of electrically welded tanks.

* * *

DIRECTORS of the Independent Pneumatic Tool Co. Chicago, have been re-elected. They are Boetius H. Sullivan, John B. Hurley, August Gatzert, Leonard S. Florscheim, William A. Lieberman, R. S. Cooper, F. W. Buchanan, E. G. Gustafson, R. T. Scott and James J. McCarthy. The directors have re-elected Boetius H. Sullivan chairman of the board, J. B. Hurley president, R. S. Cooper first vice president, R. T. Scott second vice president, F. W. Buchanan secretary and E. G. Gustafson treasurer.

* * *

OFFICERS of the Noiseless Typewriter Co., Middletown, Conn., recently were elected as follows: President, Charles W. Colby, New York; vice presidents, Holland S. Duell and Arthur F. Hebard, New York; treasurer, Earle H. Russell; secretary, Joseph Merriam; directors, the officers, except Mr. Russell, and Henry J. Fuller, J. A. O'Brien, Ottawa, Can., Frederick P. Warfield, Fred H. Payne and B. G. Collier, all of New York, and Samuel J. Moore and E. Gordon Wills, both of Toronto.

* * *

NORMAL transfer has been made of the J. Stevens Arms Co., Chicopee Falls, Mass., by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., to the Savage Arms Corp., of Delaware, for $1,500,000, payable in gold. The Westinghouse interests operated the plant during the war, and in 1919 the Savage Arms Corp., assumed control and has since been operating it. The new owner will continue the making of sporting firearms. It will pay $125,000 down for the property, the balance to be paid in 11 promissory notes.

* * *

EXTENSIVE improvements in the plant of the Ironton Fire Brick Co., Ironton, O., and development of a large acreage of fire clay land recently acquired in the Olive Hill region of Kentucky, are to result from the company's recent increase in capitalization. Two new 30-foot kilns, a new concrete drying floor, complete rebuilding of storage bins, elevators, etc., and installation of a measuring device for clay mixtures, are included in the improvements. A 1500-foot double track switch has been built at Bradmyer, Ky., connecting the Chesapeake & Ohio railroad with the company's 2800-foot tramway which operates between the clay tipple and the mines. Plans are being made for a new brick plant at the mines. E. F. Myers is president of the company.

Surveys English Steel Industry

New Year Expected To Be Marked by Increased Steelmaking Activity in Great Britain—Discusses Low Ratio of Output to Wages—Expert Says Germany's Scrap Material Is Almost Exhausted

Staff Correspondence

European Headquarters,
THE IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Feb. 28.—A comprehensive survey of the British iron and steel industry in 1921 has been prepared by H. B. Allin Smith, assistant trade commissioner, department of commerce, London. This report contains statistics of British production, exports, imports, prices, and other fundamental data.

With regard to the outlook, Mr. Smith in his report says: "The new year 1922 is confidently expected to bring about a gradual quickening of steel making activities in the United Kingdom. The capacity of the British iron and steel industry is greater by approximately 50 per cent that it was in 1914, the potential ingot capacity having increased from about 7,000,000 tons to a present annual capacity around 11,000,000 tons. A new level of costs is being sought to provide a stable foundation for trade revival. Many look to see this level form at about 40 to 50 per cent above the 1914 basis. This seems reasonable, in view of the adjustments in the past year. And if this is true, then the present selling prices of iron and steel products, with minor variations, already have been drastically revised to an extent which places them satisfactorily near the new base. As compared with prices, however, other factors in the industry are yet high, and must permit further deflation. Among them are wage rates and freights. Tabular data or British wages are shown in the accompanying table. Still other factors, especially fuel and ore, are already at a low level, so near the 1914 figures in fact that the new year may be expected to boost them upward more nearly to the level of steel selling prices. The principal items at the opening of 1922 as compared with the prewar level stand as follows:

Relative position of costs and prices above the prewar level:

	Approximate Per cent
Prices of iron and steel products....	40- 60
Wages of labor:	
Ironworkers	75-110
Steelworkers and millmen.....	85- 95
Materials:	
Iron ore	9- 10
Fuel	20- 30
Freight rates:	
Pig iron and semifinished steel..	- 80
Finished steel	100-110
Shipping charges:	
Port dues, etc.	150-250

"The factors in this list which are out of line with the present low selling prices must soon give way to further adjustments. There may indeed be additional but slight cuts in the steel prices themselves to encourage immediate buying. But an early stiffening of price quotations is anticipated, and the year ought to see a completion of the relevelling process so well advanced in 1921.

"With these contemplated changes, steel produced in the United Kingdom ought again to enter foreign markets, to supply latent and piled up demands in competition with continental and Amercan exporters of steel."

Wage Costs Analyzed by British Federation

London, Feb. 28.—In an analysis of world wide business conditions recently issued by the Federation of British Industries it is stated that the three underlying causes of unsatisfactory business conditions throughout the world are as follows: Lack of balance in the world's markets with consequent under production; unsound government finance resulting in chaotic exchanges; and in certain countries, the low ratio of output to wages which means that at present relative value an individual is producing less than he consumes. The report is as follows:

"It cannot be denied that by far the greatest element in cost of production is the wage cost. We must therefore face the fact that to secure a substantial reduction in prices we effect a substantial reduction in wage costs. This can be done in two ways; either by reducing the rates of wages or by working people giving a greater output for the wages which they receive. In many industries the necessity of reducing wage costs has been recognized by the workmen; they have accepted the requisite wage adjustments and are co-operating with the employers in reorganizing the work with a view to cheapening output. On the other hand certain arguments have been advanced against such a policy which, fallacious though they are, have had a certain effect upon the minds of working men.

"If price reductions are to be made without impairing the standard of living, the workers must be prepared to give a higher output per head and even, where efficiency may make it desirable, to extend the existing working hours. This in itself would in many trades have a considerable effect in reducing production costs, but it may be necessary to go further and for the workers to be prepared to accept a money wage which may, until business revives, give them a lower standard of living than that which prevailed before the trade depression set in, or even than their prewar standard. Further if these reductions of wages are to be carried out without undue hardship, it is desirable that the movement should be as widespread and uniform as possible. A long delay in the adjustment of wages tends to prevent a fall in retail prices, and so to impose more hardship upon those workpeople whose wages are being drastically reduced through the stress of economic competition."

German War Scrap Nears End, Says Stinnes

Dusseldorf, Germany, Feb. 26.—In a recent speech at a meeting of the government's fuel control board in Germany, Hugo Stinnes discussed the fue' problems of the German iron and steel industry. "Germany," he said, "during the past two years has been using up a huge accumulation of scrap left over from the war. This process is still going on though the end of Germany's scrap pile is in sight. Owing to conditions which have recently prevailed, with large supplies of scrap available, Germany has made far more open-hearth than basic bessemer steel." This cannot be continued," Herr Stinnes declared. "Instead, we shall soon be compelled to make pig iron from ore and steel from pig iron since our stocks of scrap will have disappeared. Under these circumstances much more satisfactory supplies of coke will be necessary. Under present conditions the German coke production is entirely inadequate for the capacity production of pig iron. Unless we are able to keep our blast furnaces going more satisfactorily, in the next period of world prosperity we shall not be in a position to compete against other leading iron and steel producing countries."

Official figures show that the production of coal in Germany in 1921 was 136,210,088 metric tons compared with 131,340,797 tons in 1920 and 173,096,426 tons in 1913. The production of coke last year in Germany was 27,921,341 metric tons compared with 25,177,039 tons in 1920 and 32,652,933 tons in 1913.

Users Purchase Secondhand Tools

New Machinery Orders Are Extremely Limited as Buyers Fill Needs with Used Tools—Machinery Prices Are Weakening—Crane and Mill Equipment Demand Is Slowly Improving

ORDERS for machine tools and shop equipment continue to be chiefly for secondhand machinery, buyers being absolutely indifferent toward new equipment. Even the orders for used machinery are few and far between, although in some sections of the country a slight revival of interest is reported. During the week the Ward Baking Co., New York, placed a sizable order, while the Maine Central railroad bought three heavy machines. An Elyria, O., interest was also a buyer taking four multiple drills, while a Chicago buyer took three milling machines. Aside from these, most buying was of single tools. It now is understood little buying will be done by the Delaware & Hudson railroad against its list. Other railroad buying is also being restricted although the Santa Fe and the Rock Island roads are reported to be actively negotiating. Reports are also current to the effect the Otis Elevator Co. will restrict its purchases to two lathes, although its recent inquiry called for a number of tools.

While single tool inquiries are in the majority a number have been received by dealers asking for more. It is understood the H. H. Franklin Mfg. Co., wants 20 tools, this being the largest inquiry noted recently. Dealers in the East also are working on an inquiry from the Australian government for tools for a locomotive repair shop. Machine tool prices appear to be weakening. The Monarch Machine Tool Co., Sidney, O., has reduced quotations on its line of lathes 10 per cent and the Williams Tool Co., Erie, Pa., now is quoting prices on its pipe machinery 20 per cent lower. A line of upright drills also has been cut. In addition to these, shading is being done on other lines whenever such action is necessary.

Interest in cranes and heavy equipment is slowly reviving. Orders for cranes placed during the past few days have been of little consequence but inquiries are reported increasing and a number of postponed projects are being revived. In connection with demand for heavy machinery and equipment, the West Leechburg Steel Co. has placed an order for a strip mill, and the Wheeling Steel Corp. has contracted for three hydraulic shears. Makers of rolling mill equipment report the outlook as promising.

Eastern Demand for Machinery Still Is Listless

NEW YORK, March 14.—An outstanding order in the local machine tool market is a sizable list of metal and woodworking equipment for the Ward Baking Co., this city. The machinery is for installation in a shop to be erected for the manufacture of motor trucks for the company's own use, and includes more than 20 machine tools. Another order calls for three heavy machine tools, including a boring mill, for the Maine Central railroad, this business being placed with two eastern manufacturers.

The Delaware & Hudson railroad, which has had a list pending for some time for several machines, has decided, it is said, to postpone all action indefinitely, except in buying a car wheel lathe and a boring mill. The Otis Elevator Co,, this city, will restrict its buying to two lathes, according to present indications. A department of the Australian government is sending out inquiries for miscellaneous equipment for a locomotive repair shop. The market generally is dull and listless.

The Monarch Machine Tool Co., Sidney, O., has reduced prices on engine lathes, 10 per cent, and the Williams Tool Co., Erie, Pa., on pipe machinery, 20 per cent.

Compilation of an extensive list of machine tool equipment is underway by the H. H. Franklin Mfg. Co., Syracuse, N. Y., for its proposed new plant, but at the moment is undergoing a temporary delay due, it is said, to a change in the personnel in direct charge. While nothing definite has been announced, it is believed that the plant will be located in Eastwood, a suburb of Syracuse, N. Y.

Action on the two 10-ton cranes, with 90-foot span, for the American Car & Foundry Co., 165 Broadway, is expected daily. A small 1-ton tramrail system has been purchased by the company from the Cleveland Crane & Engineering Co., Wickliffe, O. Early action is also expected on a 10-ton electric overhead crane by the Glenn Falls Portland Cement Co., Glenn Falls, N. Y. This is a revival of an inquiry issued several months ago. The Bath Portland Cement Co., Bath, Pa., is to close on a bucket operating crane for a proposed plant at Easton, Pa. The Yonkers Builders Supply Co., Yonkers, N .Y., has purchased a used stiff legged derrick, with 3-drum electric hoist.

Current inquiry includes a 110-ton electric crane, with 53-foot span, for a power plant, and a 150-ton electric crane with 80-foot span.

Tool Orders Reflect Depression

CLEVELAND, March 14.—Trading in the machine tool market in this district continues to reflect the slow operating rates in the metalworking industries. However, small buying continues on a small scale and during the week the total of individual sales represents fairly sizable trading. Buyers are confining their purchases to needs and these are being filled with secondhand machinery. New tools appear to be a drug on the market. While individual orders continue to be received it is sig-

nificant that few of them are being placed by manufacturers in Cleveland proper. Illustrating this quite vividly is the statement of a large local dealer, to the effect that of a total of 80 machines which it has disposed of since the first of the year, only two were taken by interests in Cleveland. The rest were disposed of in other centers where industrial activity appears to be on a higher plane than here.

During the past few days an Elyria, O., interest purchased four multiple spindle drills. A Chicago buyer also purchased from a local dealer three milling machines, while the Dexter Machine Co., Fairfield, Iowa, took a lathe. A number of other single tool sales were made but none was of importance and had little bearing on the market. Inquiries continue to be received at a great rate. Every dealer here states that if business on only one half the inquiries current is done, the volume will be sizable. However, little hope is held out that purchases will be made against a number of railroad lists now current here. Some buying has been done against the list of the Nickel Plate but this has been inconsequential. The H. H. Franklin Mfg. Co., Syracuse, N. Y., is understood to have an inquiry in the market for 20 tools. The Sterling Brass Co., Cleveland, is reported in the market for 10 molding machines and several machine tools, including turret lathes. The Consolidated Iron-Steel Co., Cleveland, wants a drill press.

Demand for cranes has not improved. Makers here, however, report that the outlook is brighter than at any time in a year due to the increased number of inquiries and the reviving interest being shown in their products. It is expected a number of propositions which have been postponed will shortly be revived. The Wheeling Steel Corp.'s list is still the largest item before makers here.

Machinery Demand Is Limited

MILWAUKEE, March 14.—The first half of March compares well with the corresponding period of both February and January in the number of actual sales of machine tools in this market. Inquiries are numerous but are slow to close. On the whole, business is quiet and is not making the headway expected earlier in the year. At the same time plants engaged in various metalworking processes are receiving better orders and the state of activity of the average machine shop and foundry is greater than it has been since the first of this year. The fact remains, however, that virtually all shops have plenty of capacity, both in equipment and area, to handle a far greater quantity of work than they are now doing, and until the maximum is reached and additions are found necessary, the demand for machine tools probably will run along as it has for the last few months, being largely of a replacement nature. Wherever possible, shop owners are buying used tools, of which there is yet available a large quantity of relatively high quality and efficiency at prices meaning a decided economy under the cost of new machines.

Inquiry for Tools Is Improved

BOSTON, March 14.—Inquiry for machine tools has improved. This, however, has as yet been without reflection in sales and most Boston dealers report a decidedly quiet week. Secondhand equipment is practically all that has moved. Prices are soft and some manufacturers, through financial necessity, are selling new equipment at prices almost equal to some secondhand figures. One line of pipe machinery has been reduced 20 per cent and a readjustment on a line of upright drills results in a 5 or 6 per cent reduction. Most dealers seem hopeful. New England tool manufacturers in most cases report a gradual increase in business throughout the country. One manufacturer with scattered sales offices has experienced good business in northern New York territory. Another manufacturer reports an increase in foreign orders during the last 10 days. Sales of the past week include a used planer to a machinery manufacturer, a milling machine to a textile mill, three lathes to as many repair shops in greater Boston, and a miscellaneous lot of individual tools to scattered users in Rhode Island, eastern Massachusetts and Maine. Most of the recent buyers have been small companies. Textile mills are for the most part out of the market on account of the labor situation. Some orders in fact have been cancelled due to this cause. Inquiry is made up of small orders as large users are at present out of the market. Crane inquiry is quiet, although one engineering firm recently bought two cranes of approximately 15-tons capacity each for use outside of New England.

Canadian Market Is Spotty

TORONTO, Ont., March 14.—Business in the machinery and machine tool market was somewhat spotty during the past week. Some dealers report success in securing orders while others state the week was dull. On the whole, however, demand is improving and while sales are confined to one or two machines to a customer, there are more buyers entering the market than in several months.

Manufacturers of some lines, especially small tools, have been successful in closing good orders during the past few weeks and the majority have been steadily increasing their operations.

Market Is Devoid of Feature

PITTSBURGH, March 14.—Duller than in recent weeks, the machine tool market during the past week has been practically devoid of feature. Sales have comprised single units covering lathes, boring mills, punches, shears, etc. Many inquiries for such equipment also are current. Three or four propositions involving a large number of machines give promise of early closing. These include the lists of the Wheeling Steel Corp. for three or four plants of constituent companies and the H. H. Franklin Mfg. Co. Klenck Bros., Warren, Pa., wants an engine lathe, a shaper, drill press, grinder, electric drill, arbor press and punch with vises tools and other equipment for a repair shop and garage. The Greenwood Construction Co. Carson and Twenty-fourth streets, Pittsburgh, is in the market for machine shop equipment. Several schools want equipment for vocational training departments including the high schools at Princeton and Charleston, W. Va. With sustained improvement in the steel market machine tool sellers generally are recommending that prospective customers close promptly on needed equipment before higher prices are inaugurated. One dealer reports a better aggregate of sales since the first of March than in any period during the past 15 months.

In connection with heavy equipment, the West Leechburg Steel Co. recently placed a contract for a strip mill with the Treadwell Engineering Co. covering 20-inch roughing and 16-inch finishing equipment, the Birdsboro Steel Foundry & Machine Co. to furnish the tables, etc. The Wheeling Steel Corp. recently awarded the Morgan Engineering Co. a contract for three hydraulic intensified driven shears for its new plant. Manufacturers of rolling mill equipment report the outlook is promising and a fair demand for rolls is current.

While numerous crane inquiries still are pending, only one order is noted. This is from a plate glass company in western Pennsylvania, and is for a 5-ton crane with 57-foot span. New crane inquiries keep up at a good rate but

various reasons are found to defer action. Occasionally hoist sales are noted, noticeably of ½ to 2-ton capacity and many inquiries are held in abeyance.

Most activity in connection with foundry equipment is prospective although a few sales have been noted recently. Recent orders include a sand mixer for a nearby user; an 8-inch sand mixer to the National Radiator Co., New Castle, Pa.; a large pneumatic rollover molding machine for Patton Bros., Marietta, O.; a cupola and blower for the Stevenson Co., Wellsville, O.; a grinder for a local foundry, and numerous orders for flasks, riddles and small supplies including a fair sized one for flasks from the Carnegie Steel Co.

Woodworking Equipment in Demand

SAN FRANCISCO, March 9.—No appreciable improvement is noted in the buying rate in the local market for machine tools and shop equipment. Dealers report inquiries are numerous and the outlook is more promising. No large sales were reported during the past month, single tool requirements making up the bulk of the business done. Due to the increase in building activity demand for wood working machinery is good and dealers state sales of this type of equipment are increasing. Some of the railroads are coming into the market with inquiries for small lists but many dealers are of the opinion that little will be done, in the way of actual closing.

Recent sales include a 26-inch lathe, a 3-foot radial drill and a 24-inch planer to an oil well company in the southern part of the state. One dealer reports the sale of a 48-inch lathe and a 6-foot drill to a mining interest in Mexico. The Southern California Edison Co. purchased three 35,000 horsepower units for its Big Creek No. 3 plant from the Wellman- Seaver-Morgan Co. and a 40-ton locomotive crane and other tools from the U. S. Machinery & Steel Co. The commission of public docks, Portland, awarded a 25-ton locomotive crane to the Browning Co., Cleveland. The Listo Pencil Co., Alameda, recently purchased two automatic lathes, a miller and four plain lathes. Among additional sales reported are a 4-foot radial drill, a 24-inch turret lathe, a 42 x 36-inch lathe and a 72-inch gear cutter.

Tool Demand Is Erratic

CHICAGO, March 14.—Bookings of machine tool dealers are spotty, business coming unequally in various periods. While one dealer may be finding business improved another reports a falling off in orders. Inquiry is fairly good but does not result in sales, prospects failing to come to the point of closing. It comes from widely diverse branches of industry and all over the country. One detriment to selling of new tools is the presence of secondhand tools in excellent condition, at prices half or less those of exactly similar new tools. In competition with these tools concessions are being made by manufacturers, although they are not reducing prices in general. Turret lathes have been cut sharply by one maker, but others have not followed. The Rock Island railroad is said to be negotiating for some of the equipment on its recent inquiry, but apparently has not placed any of it. The Santa Fe has asked prices on a double end bolt cutter, a heavy duty gap bed engine lathe and a heavy duty shaper.

Crane demand is slow but some sales are being made. The Whiting Corp. has sold two 15-ton cranes to the Kewanee Boiler Co., Kewanee, Ill., a 55-ton crane to the city of Lansing, Mich., a 1½-cubic yard bucket crane to the Lewes Fertilizer Co., Philadelphia, and a 3-cubic yard bucket crane to the Central Illinois Power Co., Harrisburg, Ill.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

GADSDEN, ALA.—The Eureka Foundry Co. has been organized here and plans to build a foundry. Evan Owen is one of the officers.

BRIDGEPORT, CONN.—The Hudson Erecting Co. has been organized to do all kinds of steel erection work by James Hudson and Edwin McPhee.

BRIDGEPORT, CONN.—The Fabric Machine Co. has recently been incorporated with $50,000 to manufacture and deal in machinery. The incorporators are J. J. Musante, C. J. Lewis and A. E. Bromley, Bridgeport. The company will carry on the business formerly conducted by the A. I. Adams Co., fabric machine manufacturers, having purchased the business, equipment and patents.

HARTFORD, CONN.—The Spafford Machine Screw Works, Inc., has increased its capital stock to $95,000.

HARTFORD, CONN.—Contract for a 1-story, 50 x 250-foot plant for the manufacture of machinery will be awarded shortly by the Bush Mfg. Co.

HARTFORD, CONN.—A 1 and 2-story building, 75 x 115 feet, for battery charging, will be erected by the Hartford Electric Light Co.

HARTFORD, CONN.—Stillman Shaw & Associates have been incorporated with $25,000 capital as an engineer by Stillman A. Shaw, Lawrence A. Howard and Joseph F. Berry.

HARTFORD, CONN.—The Stacks Engineering Co. has been incorporated to build machinery with $50,000 capital by Don H. Stacks, Oswald W. Marrin and John H. Lancaster, both of Litchfield, Conn.

MERIDEN, CONN.—Handley Bros., Inc., has been incorporated to make jewelry and silverware with $10,000 capital by John Handley, George Handley, F. V. Handley and N. Handley.

NEW BRITAIN, CONN.—Landers, Frary & Clark Mfg. Co. is to erect a 1-story factory addition.

NEW BRITAIN, CONN.—Plans are being made for a 1-story, 40 x 80-foot boiler house for the American Hosiery Co., to cost $20,000.

STAMFORD, CONN.—Remington Oil Engine Co., of Stamford, Inc., has been organized with a capital of $4000. W. A. Clark, 6 Maple avenue, Glenbrook, is one of the organizers.

STAMFORD ,CONN.—The Allen-Hogan Corp. has been incorporated with $50,000 capital to make metal goods, by R. E. Gillmor and A. E. Moore and J. L. Watson, both of New York.

WALLINGFORD, CONN.—General contract has been awarded for the proposed $125,000 hardware plant to be erected by H. L. Judd & Co.

WATERBURY, CONN.—The Lux Clock Co. has let the contract for a 3-story, 34 x 38-foot factory addition.

CHICAGO—J. Smith has let a contract for

a 1-story sheet metal shop, 40 x 74 feet, at 2118 South avenue, at a cost of $18,000.

CHICAGO—W. J. Kehl, 1225 North Maplewood avenue, has awarded a contract for a 1-story machine shop, 75 x 111 feet, to cost about $15,000.

CHICAGO—The V. & B. Automatic Bolt Co., 190 North State street, has been incorporated with $150,000 capital stock by Frank H. Johnson, W. F. Smith and G. H. Hines.

CHICAGO—The Alfred Johnson Skate Co., 2812 West North avenue, plans a 4-story plant building, 50 x 138 feet, to cost about $100,000.

CHICAGO—The Chicago Auto Body Co., 365 East Twenty-sixth street, has been incorporated to manufacture auto bodies, etc., by George N. Newgren, Freda Targa and Alfonso Targa.

CHICAGO—The Greenduck Metal Stamping Co., 2127 Tilden avenue, has been incorporated with $100,000 capital stock to manufacture and deal in pins, badges, containers, etc., by W. U. Watson, E. Robertson, R. C. Wheeler and others.

PEORIA, ILL.—The Illinois Traction Co., Mayer building, plans a 1-story power house to cost about $500,000.

INDIANAPOLIS.—The Standard Metal Co. has increased its capital stock from $100,000 to $250,000.

KITTERY, Me.—The Yield-Wheel Corp. has been incorporated to build vehicles with $20,000 capital stock by Horace Mitchell and D. E. Phillips.

PORTSMOUTH, Me.—The Selden Mfg. Co. has been incorporated to make automobile tools, etc., by Edgar B. Weeks, W. H. Waterhouse and M. H. Richardson.

BOSTON—Bids have closed for a 1-story, 300 x 400-foot machine shop for the Meisel Press Mfg. Co. in the Dorchester district.

BOSTON—Bids have closed for a 1-story, 50 x 500-foot inspection shop for the Boston Elevated railway.

BOSTON—Eastman Clock Mfg. Co., has been incorporated with $5000 capital, by Joseph H. Eastman, James L. Ennis and A. A. Ennis, of Danvers, Mass.

BOSTON—The Modern Pattern Shop, Inc., has been incorporated with $20,000 capital by William H. Hinson, Malden, Mass., Claude S. Mickle and Stanley Bacon.

BOSTON—The Special Tool & Machine Co. has been incorporated with $75,000 capital by Carl J. Wennberg, Milton, Mass., Bengt A. Svenson and Edwin A. Bye.

BOSTON—The United Refractories Co., Inc., has been incorporated with $200,000 capital stock by Arthur W. Leavitt, Dagmar Anderson and M. E. Buchanon.

BOSTON—The Jepson Mfg. Co. has been incorporated to build machinery with $350,000 capital by Leland Powers, Newton, Mass., John J. Shay and Robert H. Montgomery, Cambridge, Mass.

BOSTON—Commonwealth Motor-Ship Co. has been incorporated with $30,000 capital. The incorporators are Charles N. Fisher, president; Samuel Kann, New York, treasurer, and Louis Schulman.

BOSTON—The Sheaff-Deuschle-Mills, Inc., has been incorporated to make mechanical appliances with $10,000 capital by Walter N. Sheaff, Watertown, Mass., Louis H. Deuschle and Francis H. Mills.

MALDEN, MASS.—The Malden & Melrose Gas Light Co. plans to increase its capital stock to $651,700 for improvements and additions to its plant.

WESTFORD, MASS.—The Abbot Worsted Co. is taking bids for the erection of a steel bridge in Ford village, where it is erecting a mill.

WHITINSVILLE, MASS.—Plans are being figured for a 3 and 4-story, 95 x 300-foot addition to the Whitin Machine Works.

WORCESTER, MASS.—The Hampshire Electrical Appliance Corp. has been incorporated with $100,000 capital to build washing machines by Laurence K. Foote, Southbridge, Mass., Lewis A. Wilson and Walter L. Hubbard.

LANSING, MICH.—The Kirchen Machine Co. has started work on an addition.

STURGIS, MICH.—The Hirsch Mfg. Co. has awarded a contract for a 3-story addition, 130 x 200 feet.

CONCORD, N. H.—Plans are being drawn for a 1-story locomotive repair shop for the Boston & Maine railroad, to cost $300,000.

PORTSMOUTH, N. H.—The Boston & Main railroad plans to rebuild a 1-story engine house at an estimated cost of $70,000.

BAYONNE, N. J.—Plans have been completed for a $48,000 addition to the Constable Hook refinery of the Standard Oil Co., New Jersey.

CAMDEN, N. J.—A $30,000 plant will be erected by the Standard Tank & Seat Co. The building will be 2-stories, 32 x 75 feet.

CAMDEN, N. J.—Bids were closed March 14 on a plant for the J. B. Van Sciver Co. The Ballinger Co., Philadelphia, is architect in charge.

MONMOUTH JUNCTION, N. J.—The Lockbolt Mfg. Co. has been incorporated with $100,000 capital stock by Charles B. Rowland, Myron W. Weaver and Charles W. Weeks.

NEWARK, N. J.—A 2-story, 105 x 220-foot factory building will be erected here by the Bayonne Steel Products Co. Carl I. Goldberg, Bayonne, N. J., is architect.

NEWARK, N. J.—Plans are being prepared by the Warren Webster Co. for a 2-story factory building for the manufacture of heating equipment. The Ballinger Co., Philadelphia, is architect in charge.

NEWARK, N. J.—The Newark Bay Terminal Corp. has been organized as a subsidiary of the Submarine Boat Corp., Port Newark, for the development of a freight terminal. It will also handle certain other phases of the Submarine Boat Corp.'s activities, including steel fabricating.

NEWARK, N. J.—A $30,000 contract has been awarded the American Concrete Steel Co. for a plant for the Eastern Steel & Wire Co. The plant will be 180 x 520 feet. The company will manufacture agricultural implements, automobile parts and various descriptions of wire. E. A. Henry is president.

BROOKLYN—The American Machine & Foundry Co. will make plant alterations for the manufacture of elevators.

BROOKLYN, N. Y.—The New York Bolt & Specialties Co. has been incorporated with $43,000 capital stock by E. W. Farmer, A. J. Bock and others. The company is represented by C. M. Stowe, 232 Kent street.

BROOKLYN, N. Y.—Philip McCoy & Sons, ironworkers, have been incorporated by P. E. and J. McCoy. The company is represented by H. A. Back, 50 Court street Brooklyn.

BROOKLYN, N. Y.—The Hopwood Retinning Co. has been incorporated to make metal cans with $200,000 capital stock by J. A. and B. Hopwood and R. B. Coords. The company is represented by W. H. Robinson, Elmshurst.

BUFFALO.—M. A. Moslow & Bro., wood and metal products, have been incorporated with $25,000 capital stock by M. A. and J. S. Moslow and J. D. Martin. The company is represented by E. S. Humble

BUFFALO—Jewett & Co., stove works, has awarded a contract for a 2-story plant addition, 75 x 95 feet.

BUFFALO—Wesley L. Kirchey, 3149 Bailey avenue, plans a 1-story machine shop, 32 x 35 feet.

BUFFALO—The Hays Overfeed Stoker Co. has been incorporated with $10,000 capital stock by C. N. Hays, A. A. Mohr and A. L. Lyth. The company is represented by A. W. Crosby.

CORTLANDVILLE, N. Y.—The Willex & Haig Machine Works has been incorporated with $20,000 capital stock by J. and A. J. Willex and W. S. Haig. The company is represented by Tobin & Clark

HOOSICK FALLS, N. Y.—The Hoosick Falls Radio Parts Mfg. Co. has been incorporated by F. H. and J. M. Burns. The company is represented by E. Tiffany.

MONTICELLO, N. Y.—The Monticello Telephone Co. has increased its capital stock from $10,000 to $25,000.

NEW YORK—The Acme Lighting Fixture Co. has increased its capital stock from $30,000 to $75,000.

NEW YORK—The Third Avenue Bed Spring Co. has been incorporated by M. Sussman, M. Dopkin and I. Sherling. The company is represented by A. J. Herrick, 99 Nassau street.

NEW YORK.—The Fordham Electric Co. has been incorporated by D. Reitman, H. Laboda and F. Cobb. The company is represented by M. Gross, 3208 Third avenue.

NEW YORK—The Wotten Steamship Corp. has been incorporated with $15,000 capital stock by J. R. Sykes, M. Roger and M. E. Bauer. The company is represented by P. Bonynge, 111 Broadway.

NEW YORK—The Sanitary Filter Device Co. has been incorporated with $200,000 capital stock by A. Kuperman, J. M. Barry and S. A. Giacobbe. The company is represented by Goodman & Werner, 51 Chambers street.

NEW YORK—Edward W. Young & Co. have been incorporated with $20,000 capital stock to make lamps and fixtures, by E. W. and M. Young and P. Edelstein. The company is represented by G. C. Parmet, 1328 Broadway.

NEW YORK—The National Airphone Corp. has been incorporated to make radio apparatus with $50,000 capital stock by H. Gitlin, J. H. Finkler and others. The company is represented by J. M. Herzberg, 2 Rector street.

NEW YORK—E. A. McCormack, steel products, has been incorporated by E. A. and H. W. McCormack and C. H. Rogers. The company is represented by W. M. Cahill, 305 Washington street.

NEW YORK—The Aldrich Curtis Corp. has been incorporated with $10,000 capital stock to make metal disks, by S. W. Aldrich, H. M. Curtis and others. The company is represented by A. L. Salkin, 52 Broadway.

NEW YORK—The Sound Salvage Corp., salvage machinery, has been incorporated by R. S. M. Mitchell, J. A. Rotchford and B. H. Larson. The company is represented by H. W. Showers, 52 Broadway.

NEW YORK—The Alvon Mfg. Co. has been incorporated with $100,000 capital stock to make vaporizers for engines, etc., by J. B. Hilton, C. G. Albin and T. H. Vaughn. The company is represented by Ashley & Foulds, 156 Broadway.

NEW YORK—B. F. Wood, boat and hydroplane construction, has been incorporated with $250,000 capital stock by B. F. and J. A. Wood and A. G. Gill. The company is represented by Montgomery, Peabody & Grace, 2 Wall street.

NEW YORK—The Ironite Corp. of America has been incorporated to make powder for welding, with a capital stock of $300,000, by H. H. Drysen, H. Schulze and O. Hackeman. The

company is represented by A. Oberwager, 233 Broadway.

NEW YORK—An appropriation of $500,000 is being considered by the board of estimate, for the construction of drydocks and shops for municipal marine work. It is understood the shop buildings and machinery will cost approximately $200,000. The drydocks and shops will be operated by the department of plant and structures.

OLEAN, N. Y.—The Lang Mfg. Works, motion picture machines, has been incorporated with $100,000 capital stock by J. J. Lang, W. H. Williamson and others. The company is represented by W. M. Troy.

ROCHESTER, N. Y.—The Triangle Metal Products Corp. has been incorporated with $11,500 capital stock by J. A. Ryan, C. E. Walker and S. J. Emerick. The company is represented by Webster, Meade & Straus.

TROY, N. Y.—A power plant will be erected here by the Eastern Malleable Iron Co., which is now receiving bids on recently revised plans.

ASHLAND, O.—The Ashland Implement Co. has been incorporated with $10,000 capital stock by C. L. Hatler, Howard H. Hitchcock, O. F. Byers, F. C. Stillinger and Todd Henderson.

CAREY, O.—The C. A. C. Automatic Machine Co. has increased its capital stock from $5000 to $35,000.

CINCINNATI—The Motor Parts Machine Co. has been incorporated with $25,000 capital stock by Raymond E. Wood, H. S. Elliot, Ruth Wood, Chester R. Shook and Rolland L. Kraw.

CLEVELAND—The Cleveland Hammered Piston Ring Co. has been incorporated with $110,000 capital stock by Harry F. Grayn, R. A. Gillis and others.

COLUMBUS, O.—The Bingham Mfg. Co. has been incorporated with $100,000 capital stock by G. P. Hickle, James R. Spellman, H. N. Bingham, F. E. Kocher and J. A. Shearer.

COLUMBUS, O.—The H. C. Godman Co. has started work on a factory building.

COLUMBUS, O.—The Hupp Chemical Co. has increased its capital stock from $100,000 to $125,000.

LIMA, O.—The Farm & Industrial Equipment Co. has been incorporated with $10,000 capital stock by L. B. Fisher, Clifton I. Rust and others.

LOGAN, O.—The Logan Foundry & Machine Co. has been incorporated with $75,000 capital stock by F. V. Good, M. Yabrove, F. Harper, M. C. Good and W. Killingsworth.

TOLEDO, O.—The Heat & Power Engineering Co. has been incorporated with $25,000 capital stock by T. B. Cram, C. T. Wade, H. H. Donnelly, Thomas R. Manton and E. H. Frawley.

URBANA, O.—The Lincoln Tractor & Implement Co., which recently was organized, plans a machine shop building, 100 x 250 feet.

YOUNGSTOWN, O.—The Steel City Iron Co. has been incorporated with $100,000 capital stock by Albert W. Lau, Fred Hohloch, George A. Webster, Fred Shutrump and Oscar E. Diser.

HOLMES, PA.—Part of the plant of the Light, Railway & Equipment Co. recently was damaged by fire.

PHILADELPHIA—Bids have been closed by Harris & Richards, architects, on a factory addition for the Peerless Paper Box Mfg. Co., Inc.

PHILADELPHIA—A power plant will be erected to serve a proposed new 18-story office and bank building on adjoining property. Albert M. Greenfield is the builder.

PHILADELPHIA—A $175,000 plant will be erected by the Morris Jute Mills, the general contract having just been awarded to the Wark Co. The building will be two stories.

PHILADELPHIA—A $50,000 garage will be erected by A. W. Pusey. Plans by N. Hulme call for a structure three stories, 35 x 160 feet.

PAWTUCKET, R. I.—The Potter Fine Spinners, Inc., has let the contract for a 2-story, 40x72-foot mill building.

PROVIDENCE, R. I.—The Multiple Drilling Machine Co. has been incorporated with $25,000 preferred stock and 250 shares of common stock without par value.

PROVIDENCE, R. I.—The Builders' Iron Foundry was recently badly damaged by fire. A large overhead crane, valued at $12,000, and a considerable portion of the gun room were destroyed.

BELTON, S. C.—The Southern Foundry & Machine Co. has been incorporated with $10,000 capital stock by C. F. Cox, Lemuel Stansell and others.

SMYRNA, TENN.—The Smyrna Electric Light Co. has been organized by J. H. Edwards, E. A. King and others.

RICHMOND, VA.—The American Locomotive Co., 1301 North boulevard, plans a 1-story brass foundry at a cost of $16,000.

CHARLESTON, W. VA.—The T. & A. Brass Foundry has been organized with $20,000 capital stock by E. T. Thayer and others.

CHARLESTON, W. VA.—The T. & A. Brass Foundry Co. has been chartered with $20,000 capital stock by Ellis T. Thayer, D. D. Thayer, Thomas Allison and others.

CHARLESTON, W. VA.—A 1-story power house addition will be erected by the Libbey-Owens Sheet Glass Co. at its Kanawha City, W. Va., plant.

CHARLESTON, W. VA.—The Dunbar Light & Power Co. has been incorporated with $50,000 capital stock, by J. H. McClintic, W. G. Mathews, G. S. Skidmore, W. H. Truslow and P. J. Nelson.

HUNTINGTON, W. VA.—The American Car & Foundry Co. is taking bids on a plant extension.

HUNTINGTON, W. VA.—The American Thermos Bottle Co. of West Virginia, has been incorporated with $200,000 capital stock, by George I. Neal, L. L. Wilson, G. A. Northcott, John E. Potter and F. P. Slack.

SPRIGG, W. VA.—The Kentucky & West Virginia Power Co., 30 Church street, New York, is reported planning a power station.

WELLSBURG, W. VA.—The Eagle Mfg. Co., metal oil containers, has let a contract for the rebuilding of its plant recently damged by fire.

WHEELING, W. VA.—The Stroebel Radio & Electric Co. has been incorporated with $25,000 capital stock, by J. C. Stroebel Sr., Henry G. Weimer, H. L. Stroebel, J. A. Hutchinson, J. C. Strobel Jr., and Leon Sonneborn.

ALTOONA, WIS.—The school board let the general contract for a new high school and vocational institute costing about $150,000 to the Tschopp-Durck-Camastral Co., Chippewa Falls, Wis.

APPLETON, WIS.—A charter has been granted the Brill-Saunders Machinery Co. to manufacture and deal in machinery and mechanical devices. The company is capitalized at $150,000 and was incorporated by E. W. Brill, S. L. Saunders and W. H. Blake.

APPLETON, WIS.—New sand and gravel excavating, handling and conveying machinery costing about $25,000 will be purchased by the Appleton Sand & Gravel Co., a new $50,000 company which has taken over the holdings of the Waupaca Sand & Gravel Co., at Binghampton, on the Soo Line. John M. Balliet is head of the new company.

ASHLAND, WIS.—Bids are being asked by the board of education for the erection of a

Business Changes Recently Announced

NEW offices on the fifteenth floor of the Cunard building, 25 Broadway, New York, will be occupied by the Bethlehem Steel Corp., effective March 18. Present quarters are on the fourteenth floor of 111 Broadway.

* * *

The Peters Auto Co., Trenton, N. J., has bought the plant of the Bethlehem Paper Co., Bethlehem, Pa.

* * *

Offices have been opened at 165 Broadway, New York, by the Welded Steel Barrel Corp., Detroit, with J. J. Perosi in chacrge.

* * *

The Pittsburgh office of the Hisey-Wolf Machine Co., Cincinnati, O., has been removed from 233 Fifth avenue to 307 Bessemer building.

* * *

Branch offices have been opened in Indianapolis, 305 Merchants Bank building by the the Whiting Corp., with S. E. Stout in charge.

Detroit offices of the company have been moved from Penobscot building to 206 Stahelin building.

* * *

Sales offices have been established by the Lakeside Forge Co., Erie, Pa., at 1354 Penobscot building, Detroit, and 334 North Capitol avenue, Indianapolis.

* * *

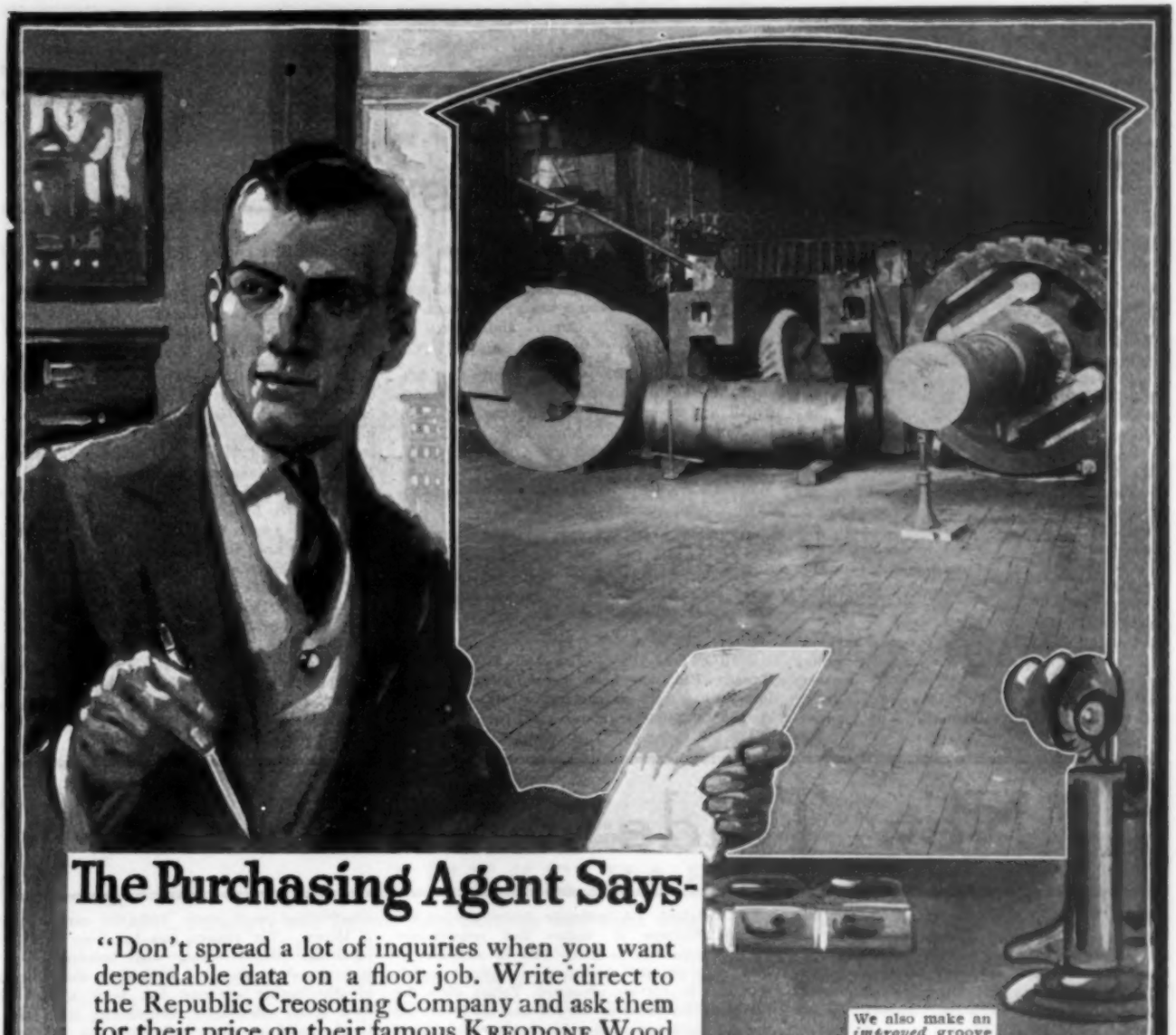
Chicago offices of the Stowell Co., South Milwaukee, Wis., founders and manufacturers, have been moved from 509 Monadnock block to 628 McCormick building. E. B. Hansen is Chicago manager.

* * *

The Whiting Corp., Harvey, Ill., has established its own branch sales office at 136 Liberty street, New York, discontinuing the agency agreement with the Worthham, Bates & Goode Trading Corp.

* * *

New quarters have been taken in East Market street by the York, Pa., plant of the American Foundry Equipment Co., 366 Madison avenue, New York.



The Purchasing Agent Says-

"Don't spread a lot of inquiries when you want dependable data on a floor job. Write direct to the Republic Creosoting Company and ask them for their price on their famous KREODONE Wood Block Floor. They'll give you a higher grade article, a block that is treated with pure, full-bodied creosote oil—none of this tar adulterated stuff—for equal or lower price. They've got the facilities for quick service and they're the only manufacturer making their own creosote oil, thus controlling their quality. I won my reputation as a buyer on the strength of the service of that KREODONE Floor out there—and I haven't a copyright on the secret."

We also make an *improved* groove block. Write and let us show you its economic advantages.

REPUBLIC CREOSOTING COMPANY

Original Makers of Wood Block Floors

Indianapolis, Ind.

KREODONE WOOD BLOCK FLOORS

Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
516 Beacon Bldg., Boston
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland

BRANCHES

St. Louis Park, Minneapolis
317 Hammond Street, Cincinnati
August Court Co., Agents,
419 Chemical Building, St. Louis

Builders Specialty Co., Omaha
834 Real Estate Trust Bldg., Philadelphia
445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hamond Bldg., Detroit

2-story addition to the high school, to be known as the C. F. Latimer Memorial and devoted entirely to manual training. It will be 65 x 110 feet and cost $120,000.

CHIPPEWA FALLS, WIS.—Bids are being taken until March 27 for erection of a junior high and vocational training school to cost about $175,000.

DURAND, WIS.—H. H. Miles, secretary of the board of education, will take bids March 15 for erection of a high school with manual training department, to cost about $100,000.

DURAND, WIS.—H. H. Miles, secretary of the board of education, will take bids about March 15 for erection of a high school with manual training department, to cost about $100,000.

EAU CLAIRE, WIS.—A machine and automobile repair shop, 50 x 100 feet, will be built at 118 South River street by Carl Girnau.

EAU CLAIRE, WIS.—A new machine and automobile repair shop, 50 x 100 feet, will be built at 118 South River street by Carl Girnau.

LA CROSSE, WIS.—W. S. Woods, engineer, Batavian National Bank building, is taking bids for a hydroelectric power plant improvement at West Salem, Wis., for E. C. Swartout, 904 Rose street, this city. The improvement consists of the construction of a power dam, the remodeling of a power house, and the installation of new dynamos, water wheels, switchboards, etc.

LA CROSSE, WIS.—W. S. Woods, engineer, Batavian National Bank building, is taking bids for a hydroelectric power plant improvement at West Salem, Wis., for E. C. Swartout, 904 Rose street, this city. The improvement consists of the construction of a power dam, the remodeling of a power house, installation of dynamos, water wheels, switchboards, etc.

MANAWA, WIS.—Plans are being completed by T. W. Orbison, engineer, Appleton, Wis., for a new hydroelectric generating plant costing $30,000 for the Little Wolf River Lumber Co. at this point. Ray C. Lindsay is manager.

MAYVILLE, WIS.—A factory building and power house will be erected by the Peerless Traveling Goods Co.

Business in Canada

BOWMANVILLE, ONT.—The Canada Slicer Corp., Ltd., has been incorporated to manufacture meat slicers, choppers, machinery, etc., with $350,000 capital stock; by Hugh J. McLaughlin, Allin F. Annis, and others of Toronto.

COLLINGWOOD, ONT.—Electro-Castings, Ltd., has been incorporated to manufacture, install and operate electric furnaces, for melting and smelting of iron, steel and other metals, also to manufacture castings, iron, steel, etc., with $40,000 capital stock; by William T. Stephens, John F. Zimmerman, John Wilson and others.

TORONTO, ONT.—The International Silver Co. of Canada, Ltd., has been incorporated to manufacture electro-plated ware, metal products, etc., with $2,000,000 capital stock; by Thomas N. Phelan, John M. Godfrey, James E. Lawson and others.

TORONTO, ONT.—The Dill Mfg. Co., of Canada, Ltd., has been incorporated to manufacture hardware, machinery, valves, lock nuts, etc., with $40,000 capital stock; by John R. Marshall, Stanley R. Jefferess and others of Hamilton, Ont.

TORONTO, ONT.—The Dryo Cabinet Co., Ltd., has been incorporated with $40,000 capital stock; by Benjamine C. Seale, Casper L. M. Peterson, John A. Izzatt and others.

TORONTO, ONT.—The Commercial Cars of Canda, Ltd., has been incorporated to manufacture and deal in automobiles, trucks, engines, machinery, etc., with $120,000 capital stock; by Emil Hallman, Hamilton J. Stuart, McGillivray Alesworth and others.

WALKERVILLE, ONT.—The Canadian Aluminum & Brass Co., Ltd., has been incorporated to carry on business as foundrymen, machinists and manufacturers of iron, steel, aluminum, brass and metal products, etc., with $250,000 capital stock; by John P. Carritte of Detroit, Mich.; Hiram H. Walker, Ebenezer M. McLean, and others of Walkerville.

MONTREAL, QUE.—Martin Motors, Ltd., has been incorporated to manufacture and deal in automobiles, trucks, engines, etc., with $50,000 capital stock; by John W. Cook, Allen A. Magee, William C. Nicholson and others.

New Trade Publications

CRANES—A 4-page illustrated circular has been published by the Whiting Corp., Harvey, Ill., in which cranes are described. These include electric and hand-power travelers, bucket-handling and gantry and jib, pillar and bracket cranes. A number of actual installations are shown.

PORTABLE TOOLS—Black & Decker Mfg. Co., Baltimore, has published a 20-page illustrated folder in which portable tools are described and illustrated. These include electric drills, electric screw driver and socket wrench, electric grinders, safety cleaning machine and electric valve grinder. Capacities, etc., are given.

CASTINGS—The Sivyer Steel Casting Co., Milwaukee, is circulating a small illustrated booklet in which alloy steel castings, including those of high carbon, vanadium, nickel and chromium steel, are described. Uses to which the various castings are adapted are enumerated and the tensile strength, elastic limit, reduction in area, etc., for the various kinds of castings are tabulated.

ELECTRODES—The National Carbon Co., Inc., New York, has published an 80-page illustrated booklet in which carbon electrodes are described and illustrated in detail. In many ways the booklet resembles a text book more than a trade catalog. A history of the carbon electrode and of the electric furnace, characteristics of carbon electrodes, uses of carbon electrodes, methods of handling and storing electrodes, specifications, furnace records and numerous other subjects pertaining to carbon electrodes, are discussed.

CUTTING TORCH—The Air Reduction Sales Co., New York, has issued a 4-page leaflet in which a cutting torch is described and illustrated. A complete description of the various features of design and construction of this apparatus is given and in addition tables showing the thickness of various metals that can be cut are presented. Tables show the necessary pressures of oxygen and acetylene and the gas consumption in cubic feet per hour when using tips adapted to the cutting of steel, cast iron or rivets. Illustrations are of sectional views of the torch.

BLAST GATES—The Steere Engineering Co., Detroit, has published a circular in which blast gates are described and illustrated. The gates are made entirely of steel and the surfaces against which the disks seat are carefully machined. Two disks are used which are made from steel plate rigidly welded to spacing blocks. When the gate is closed, it is claimed, it is as tight as it is physically possible to make it without wedging mechanism. By removing the bottom plate, the stem and disks can be taken out and the gate completely dismantled without removing it from the line.

BRONZE PRODUCTS—The American Manganese Bronze Co., Philadelphia, has published a large 36-page illustrated booklet in which various bronze products are described and illustrated. These include castings, ingots, forgings, sheets, rods, rolls, shapes, etc. In addition to this booklet the company has published a number of small leaflets each devoted to describing an individual product. One is on valve stems, another on bronze gears, another on bronze ingots, another on rods and still another on a special bronze having a minimum tensile strength of 105,000 pounds.

CEMENT GUN—The Cement Gun Construction Co., Chicago and Pittsburgh, has published an illustrated booklet of 32 pages in which construction work done with the cement gun is shown. The cement gun has been used for repairing, reconstructing and building. Illustrations are presented showing how this process of distributing concrete has been applied to steel bridge encasement, fireproofing steel structures, building walls and roofs on industrial structures, making fire stops in roof trusses, coating tile walls, covering brick walls, insulatnig hot containers, insulating cold tanks, lining coal and ash bins, lining smoke stacks, fireproofing mine shafts, building water reservoirs, making electrolytic cells, etc.

SOAKING PIT CRANES—The Morgan Engineering Co., Alliance, O., has published a 24-page illustrated booklet in which soaking pit cranes are described and illustrated. The bulletin briefly calls attention to a few of the prominent features of these cranes and shows a variety of cranes furnished by the company. The cranes are manufactured for all capacities for any required span, with or without auxiliary hoist, and for either direct or alternating current. The trolley frame is a massive one-piece open box section steel casting supported upon four steel track wheels. The automatic tongs for gripping the ingot are suspended from a steel stem attached to the lower end of charging bar and revolve on ball bearings. As the charging bar is nearly counterbalanced by counterweights suspended underneath the trolley, it is claimed the hoisting motor has little more than the actual weight of ingot to lift. A full and comprehensive description of the other parts are given including bearings, gearing, gear cases, electric brakes, foot brake, safety device, operator's cage, etc. A list of users, including some of the largest iron and steel manufacturers, is given in the back of the booklet.

Some Examples of PRESSED STEEL PRACTICE

Gasoline Tank Support
Formerly made from Malleable Casting or Drop Forging

These three items show how far superior Pressed Steel may be in certain instances over other methods of manufacture. They have been selected from among many cases in which our engineers have developed parts that are much more efficient, more easily and much more rapidly produced, and cost considerably less than previous production.

Tire Carrier
This was formerly a Casting

THESE PARTS

ARE Stronger and lighter than castings and their weight and shape are always uniform.
ARE Delivered finished, requiring no machine work.
ARE Punched for holes without the necessity of drill jigs.
ARE Tougher than castings, are not brittle, and will not break under shocks or strains.
ARE Produced much more rapidly than castings and at less cost per piece.

Possibly some part that you are using, if not the whole, could be handled more economically. Even where an article seemingly does not permit the use of Pressed Metal, a slight change in its design may bring it within the scope of the rapid, low-cost production of our presses.

Parish and Bingham Engineers are specialists in finding the right way to produce Pressed Metal Articles.

Motor Support
Formerly a Casting

PARISH & BINGHAM Corporation

Builders of Automobile Frames and Steel Stampings

CLEVELAND, OHIO

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Mesabi Bessemer, 55 per cent iron	6.20
Old Range nonbessemer, 51½ per cent iron	5.70
Mesabi nonbessemer, 51½ per cent iron	5.55

PORT HENRY IRON ORE

Per Gross Ton, F.o.b., Port Henry

Old bed 21 furnace	$4.85
Old bed concentrates, 63 per cent.	5.75
Harmony, cobbed, 63 per cent.	5.75
New bed, low phos., 65 per cent.	8.50
Lump ore for fix	6.00

Manganese Ore

Brazilian, 48 to 50 per cent c.i.f. Atlantic ports, 22 to 24½ cents per unit.

Indian 48 to 50 per cent c.i.f. Atlantic ports, 22 to 24½ cents per unit.

Fluor Spar

Washed gravel Kentucky and Illinois mines, per ton $17.50

Rivets

Structural rivets	2.00c to 2.25c
Boiler rivets, Pittsburgh	2.10c to 2.35c
Rivets ⅞-in. and smaller, Pittsburgh	70-10 and 5 to 70-10-10 off

Nuts and Bolts

NUTS

(Up to 1¼ and 1⅛ inches inclusive)

Hot pressed, square blank	$5.50 off
Hot pressed, square tapped	5.00 off
Hot pressed, hexagon blank	5.50 off
Hot pressed, hexagon tapped	5.00 off
Cold pressed, square tapped	5.00 off
Cold pressed, square blank	5.25 off
Cold pressed, hexagon tapped	5.00 off
Cold pressed, hexagon blank	5.25 off
Cold pressed semifinished hexagon nuts ⅝-in. and larger	70-10-10 off
Cold pressed semifinished hexagon nuts ⅞-inch and smaller	70-10-10-10 off
Case hardened, finished, hexagon	75-70½ off

Price f.o.f. Pittsburgh, Packages of 50.

CARRIAGE BOLTS

⅜ x 6 inches, smaller and shorter

Rolled thread	65-10-10 off
Cut thread	65-10 to 70 off
Larger and longer	65-10 to 70 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	70-10-5 to 70-10-7½ off
Cut thread	70-5 to 70-10 off
Larger and longer	65-10-5 to 70-10 off

(⅜ x 4 inches, cold punched nuts)

Cut thread	65-5 off
Larger and longer	65 off
Lag screws	70-10 to 70-10-5 off
Plow bolts Nos. 1, 2 and 3 heads	60-10 off

Warehouse Prices

STEEL BARS

Boston	2.555c
Buffalo	2.55c
Chicago	2.28c
Cincinnati	2.65c to 2.90c
Cleveland	2.36c
Detroit	2.58c
New York	2.53c
Philadelphia	2.35c to 2.40c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.375c
St. Paul	3.06c
Los Angeles	3.10c

IRON BARS

Boston	2.555c
Buffalo	2.55c
Chicago	2.28c
Cincinnati	2.65c to 2.90c
Detroit	2.73c
New York	2.53c
Philadelphia	2.35c to 2.50c
St. Louis	2.375c

SHAPES

Boston	2.655c
Buffalo	2.65c
Chicago	2.38c
Cincinnati	2.75c to 3.00c
Cleveland	2.46c
Detroit	2.68c
New York	2.63c
Philadelphia	2.35c to 2.40c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.475c
St. Paul	3.06c
Los Angeles	3.50c

PLATES

Boston	2.655c
Buffalo	2.65c
Chicago	2.38c
Cincinnati	2.75c to 3.00c
Cleveland	2.46c
Detroit	2.68c
New York	2.63c
Philadelphia	2.35c to 2.40c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.475c
St. Paul	3.06c
Los Angeles	3.50c

NO. 10 BLUE ANNEALED SHEETS

Boston	3.305c to 3.48c
Buffalo	3.40c
Chicago	3.38c
Cincinnati	3.35c to 3.60c
Cleveland	3.10c
Detroit	3.38c
New York	3.28c
Philadelphia	3.25c
San Francisco	4.10c
Seattle	4.50c
St. Louis	3.475c
St. Paul	3.66c
Los Angeles	4.50c

NO. 28 BLACK SHEETS

Boston	4.50c
Buffalo	4.25c
Chicago	4.15c
Cincinnati	4.50c to 4.75c
Cleveland	4.00c
Detroit	4.15c
New York	3.75c
Philadelphia	3.75c
San Francisco	5.60c
Seattle	5.70c
St. Louis	4.15c
St. Paul	4.43c
Los Angeles	5.60c

NO. 28 GALVANIZED SHEETS

Boston	5.50c
Buffalo	5.25c
Chicago	5.15c
Cincinnati	4.50c to 4.75c
Cleveland	4.75c
Detroit	5.15c
New York	4.75c
Philadelphia	4.75c
San Francisco	6.45c
Seattle	6.70c
St. Louis	5.15c
Los Angeles	6.45c

BANDS

Boston	3.155c
Buffalo	3.15c
Chicago	3.13c
Cincinnati	3.25c to 3.50c
Cleveland	2.96c
Detroit	3.18c
New York	2.13c
Philadelphia	3.00c
San Francisco	3.90c
Seattle	4.00c
Los Angeles	4.00c

HOOPS

Boston	3.315c
Buffalo	3.15c
Cleveland	2.96c
Detroit	3.18c
New York	3.38c
Philadelphia	3.15c
Seattle	4.50c

COLD ROLLED SHAFTING

Boston (round)	3.55c
Buffalo	3.40c
Chicago	3.40c to 3.90c
Cincinnati (round)	3.60c to 3.70c
Detroit	3.50c
New York	3.35c
New York (flats, squares and hexagons)	3.85c
Philadelphia (rounds)	3.00c
San Francisco	4.65c
Seattle	4.75c
Los Angeles	5.10c
Boston, flats, squares and hexagons	4.05c

Steel Pipe

Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
Butt Weld		
⅛-inch	54½	28
¼ and ⅜-inch	60	33½
½-inch	65	50½
¾-inch	69	56½
1 to 3-inch	71	58½
Lap Weld		
2-inch	64	51½
2½ to 6-inch	68	55½
7 to 8-inch	65	51½
9 to 12-inch	64	50½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	69	56½
Lap Weld		
2-inch	62	49½
2½ to 6-inch	66	53½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	50½	33
¼ and ⅜-inch	56	38½
½-inch	62	50½
¾-inch	67	55½
1 to 1½-inch	69	57½
2 to 3-inch	70	58½
Lap Weld		
2-inch	62	50½
2½ to 4-inch	66	54½
4½ to 6-inch	65	53½
7 to 8-inch	61	47½
9 to 12-inch	55	41½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	51	40½
¾ to 1½-inch	54	43½
2 to 2½-inch	56	45½
Lap Weld		
2-inch	50	40½
2½ to 4-inch	52	42½
4½ to 6-inch	51	41½
7 to 8-inch	47	33½

Wrought Iron Pipe

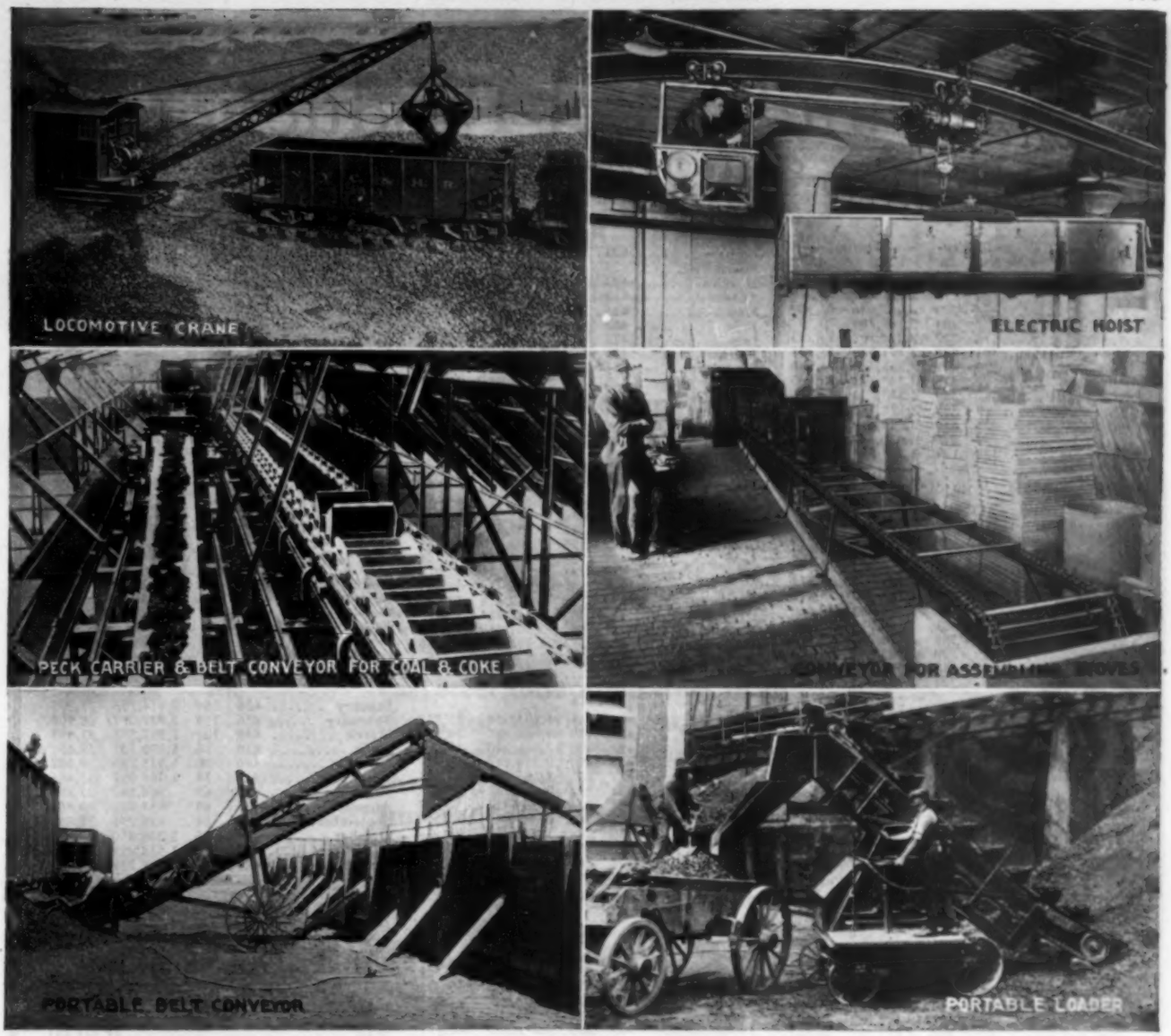
Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	3½	+22½
½-inch	36½	18½
¾-inch	42½	27½
1 to 1½-inch	44½	29½
Lap Weld		
2-inch	39½	25½
2½ to 6-inch	42½	29½
7 to 12-inch	40½	27½
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
⅛ and ¼-inch	+ 4½	+37½
½-inch	35½	23½
¾-inch	42½	28½
1 to 1½-inch	44½	30½
Lap Weld		
2-inch	40½	27½
2½ to 4-inch	43½	31½
4½ to 6-inch	42½	30½
7 to 8-inch	35½	23½
9 to 12-inch	30½	18½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+27	+39
¾-inch	+ 7½	+19½
1-inch	+23½	+35½
1¼-inch	+ 7½	+19½
1½-inch	+ 6½	+18½
Lap Weld		
2 and 2½-inch	7½	14½
3 to 4-inch	12½	3½
4½ to 6-inch	11½	2½
8-inch	8½	

Boiler Tubes

L. C. L. discounts. C. L. 4-Point differential

STEEL	
1¾-inch	22½
2 and 2¼-inch	37
2½ to 3-inch	48
3¼ to 4-inch	53
IRON	
1½-inch	1
1¾-inch	11
2 and 2¼-inch	21
2½ to 3-inch	26
3¼ to 4½-inch	28
SEAMLESS	
1¼-inch	17
2 to 2¼-inch	30
2½ to 3-inch	38
3¼ to 5-inch	43



Link-Belt Equipment for Cutting Handling Costs

THE cost of handling materials is an important factor in maintaining low production costs.

Thru many years of experience we have developed machinery that will handle raw or finished products economically, and which requires little attention or labor, operating almost automatically.

The above are a few typical illustrations of Link-Belt machinery.

To find out whether there is a more economical way of handling your material, talk the matter over with our experienced engineers.

PHILADELPHIA CHICAGO LINK-BELT COMPANY INDIANAPOLIS TORONTO

New York - - Woolworth Bldg. Wilkes Barre - - 2d Nat'l Bank Bldg. Seattle - - - - 820 First Ave., S. Louisville, Ky. - - F. Wehle, Starks Bldg.
Boston 9 - - - 49 Federal St. Huntington, W. Va. - Robson-Prichard Bldg Portland, Ore. - - - First and Stark Sts. New Orleans - - - -
Pittsburgh - - 1501 Park Bldg. Cleveland - - - 429 Kirby Bldg. San Francisco - - - 168 Second St. C. O. Hiss 504 Carondelet Bldg.
St. Louis - - Central Nat'l Bank Bldg. Detroit - - - 4210 Woodward Ave. Los Angeles - - 163 N. Los Angeles St. Birmingham, Ala. - -
Buffalo - - - 547 Ellicott Square Kansas City, Mo. - 306 Elmhurst Bldg Denver Lindroth, Shubart & Co., Boston Bldg. - - B. L. Morrow, 720 Brown-Marx Bldg.
In Canada - Canadian Link-Belt Co., Ltd., Toronto and Montreal H. W. CALDWELL & SON CO., CHICAGO, 17th and Western Ave. NEW YORK, Woolworth Bldg. DALLAS, TEXAS, 709 Main St.

906

LINK-BELT

Iron and Steel Production

Compiled By THE IRON TRADE REVIEW

Pig Iron

	-Stacks- No.	In	Output— Total	Av. daily
1907				
January	376	311	2,174,801	69,509
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total			25,299,732	
1908				
January	398	139	1,081,813	34,316
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total			15,680,140	
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,334
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,186
October	413	309	2,589,681	84,001
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total			25,337,002	
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,747
March	417	310	2,588,736	83,580
April	418	291	2,477,700	82,590
May	421	206	1,871,388	60,367
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,793	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,192
Total			26,840,314	
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,867
April	421	220	2,044,904	68,163
May	421	206	1,871,388	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total			23,198,601	
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total			29,325,513	
1913				
January	423	297	2,287,800	89,929
February	423	306	2,778,670	92,095
March	423	278	2,562,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,716,825	90,865
June	422	283	2,816,883	87,229
July	422	264	2,658,275	82,525
August	424	260	2,537,918	81,839
September	425	258	2,594,098	83,137
October	425	244	2,439,924	81,933
November	424	225	2,529,960	74,322
December	424	191	1,976,138	63,746
Total			30,652,767	
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total			22,970,926	
1915				
January	421	165	1,591,024	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,516	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total			29,573,161	
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total			39,019,123	
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	355	3,238,970	104,483
September	431	344	3,140,742	104,691
October	433	354	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total			38,164,976	
1918				
January	435	294	2,403,227	77,523
February	435	319	2,318,242	82,794
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,602
Total			38,437,488	
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,270
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total			30,578,730	
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,168
September	434	317	3,124,308	104,173
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total			36,400,968	
1921				
January	436	184	2,414,753	77,895
February	436	155	1,927,088	68,906
March	436	103	1,593,542	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	435	69	954,901	30,802
September	435	84	985,795	32,857
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	123	1,642,775	52,992
Total			16,506,564	
1922				
January	430	127	1,545,804	53,090
February	429	139	1,630,180	58,220

Lake Ore Shipments

Gross Tons, Rail and Water

1921	22,799,077
1920	60,411,572
1919	48,546,651
1918	62,836,172

Ingots and Castings

By American Iron and Steel Institute

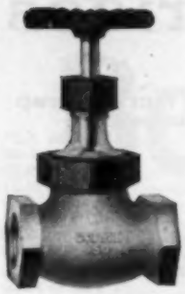
	Ingots	Castings	Total
1910	25,154,087	940,832	26,094,919
1911	23,029,479	646,627	23,676,106
1912	30,284,682	966,621	31,251,303
1913	30,280,130	1,020,744	31,300,874
1914	22,819,784	693,246	23,513,030
1915	31,284,212	866,824	32,151,036
1916	41,401,917	1,371,763	42,773,680
1917	43,619,200	1,441,407	45,060,607
1918	43,051,022	1,411,410	44,462,432
1919	33,694,795	976,437	34,671,232
1920	40,881,392	1,251,542	42,132,934

Monthly Ingot Output

Gross Tons

1921	84.2 per cent of capacity	Indicated total
January	2,203,186	2,620,000
February	1,749,477	2,080,000
March	1,570,978	1,860,000
April	1,213,958	1,440,000
May	1,265,850	1,500,000
June	1,003,406	1,190,000
July	803,376	955,000
August	1,138,071	1,350,000
September	1,174,740	1,400,000
October	1,616,810	1,900,000
November	1,668,001	1,970,000
December	1,427,093	1,680,000
Total	16,826,946	19,945,000
1922		
January	1,593,482	1,890,000
February	1,742,345	2,070,000

CRANE CO.



No. 7 Brass Globe Valve

No. 461 Iron Gate Valve

We are Manufacturers of about 20,000 articles, including

Valves, Pipe Fittings and Steam Specialties

made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures, and all purposes, and are distributors through the trade, of pipe, heating and plumbing materials.

Brass Cock

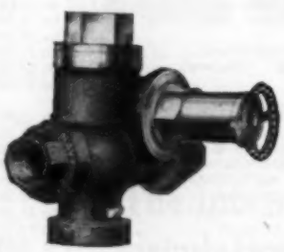
Malleable Iron Elbow

No. 437 Brass Gate Valve

No. 09 Oil Separator

Malleable Iron Return Bend

Reducing Flanged Tee



No. 962 Pressure Regulator

No. 20 Horizontal Brass Check Valve

Union

Non-Return Steam Trap

SALES OFFICES, WAREHOUSES AND SHOWROOMS:

BOSTON, SPRINGFIELD, HARTFORD, BRIDGEPORT, ROCHESTER, NEW YORK, HARLEM, ALBANY, BROOKLYN, PHILADELPHIA, READING, ATLANTIC CITY, NEWARK, CAMDEN, BALTIMORE, WASHINGTON, SYRACUSE, BUFFALO, SAVANNAH, ATLANTA, KNOXVILLE, BIRMINGHAM, MEMPHIS, LITTLE ROCK, MUSKOGEE, TULSA, OKLAHOMA CITY, WICHITA, ST. LOUIS, KANSAS CITY, TERRE HAUTE, CINCINNATI

FOUNDED BY R. T. CRANE, 1855

CRANE CO.

836 S. MICHIGAN AVE.

CHICAGO

WORKS: CHICAGO AND BRIDGEPORT

INDIANAPOLIS, DETROIT, CHICAGO, ROCKFORD, OSHKOSH, GRAND RAPIDS, DAVENPORT, DES MOINES, OMAHA, SIOUX CITY, MANKATO, ST. PAUL, MINNEAPOLIS, WINONA, DULUTH, FARGO, WATERTOWN, ABERDEEN, GREAT FALLS, BILLINGS, SPOKANE, SEATTLE, TACOMA, PORTLAND, POCATELLO, SALT LAKE CITY, OGDEN, RENO, SACRAMENTO, OAKLAND, SAN FRANCISCO, LOS ANGELES

CRANE LIMITED — MONTREAL, TORONTO, VANCOUVER, WINNIPEG, CALGARY, REGINA, HALIFAX, OTTAWA.

CRANE-BENNETT, LTD. — LONDON, ENG.

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$11.00 to 12.00
Boston (dealers)	8.50 to 9.00
Buffalo	13.50
Chicago	12.00 to 12.50
Cincinnati	9.00 to 9.50
Cleveland	12.85 to 13.25
Detroit (dealers)	9.00 to 9.50
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	9.00 to 9.50
Pittsburgh	15.00 to 15.50
San Francisco	9.00 to 10.00
St. Louis	11.00 to 11.50
Valleys	15.25 to 15.50

BUNDLED SHEETS

Buffalo	$7.00 to 7.50
Cleveland (hydraulic)	10.25 to 10.50
Cincinnati	5.00 to 5.50
Eastern Pennsylvania	10.00 to 10.50
Pittsburgh	12.00 to 12.50
St. Louis	4.00 to 4.50
Valley (hydraulic)	12.50 to 12.75

STEEL RAILS, SHORT

Birmingham	$11.50 to 12.00
Boston (dealers)	9.00 to 10.00
Chicago	13.25 to 13.75
Cincinnati	10.50 to 11.50
Cleveland	11.50 to 12.00
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	$13.00 to 13.50
Boston	11.50 to 12.00
Buffalo	15.00 to 16.00
Chicago	14.50 to 15.00
Cincinnati (net)	9.00 to 9.50
Cleveland	13.00 to 13.50
Detroit	10.00 to 11.00
Eastern Pennsylvania	14.00 to 14.50
New York	9.50 to 10.00
Pittsburgh	12.50 to 13.00
St. Louis	14.50 to 15.00

LOW PHOSPHORUS

Buffalo	$17.00
Cincinnati	16.50 to 17.00
Eastern Pennsylvania	16.50 to 17.00
Pitts. billet and bloom crops	17.00 to 17.50

SHOVELING STEEL

Chicago	$11.75 to 12.00
Pittsburgh	11.50 to 12.00
St. Louis	10.50 to 11.00

KNUCKLES, COUPLERS & SPRINGS

Chicago	$13.50 to 14.00
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	15.50 to 16.00
St. Louis	13.50 to 14.00

COMPRESSED SHEETS

Buffalo	$11.00 to 12.00
Chicago	8.50 to 9.00
Pittsburgh	13.00 to 13.50

FROGS, SWITCHES, GUARDS

Chicago	$12.00 to 12.50
Eastern Pennsylvania	13.00 to 13.50
St. Louis	11.50 to 12.00

BOILER PLATE, CUT

Detroit (dealers)	$6.00
St. Louis (dealers)	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	$12.75 to 13.25
St. Louis	11.00 to 11.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham, No. 1	$11.50 to 12.00
Boston (dealers)	11.00 to 12.00
Buffalo	15.00 to 16.00
Chicago, No. 1	12.25 to 12.75
Chicago, No. 2	12.00 to 12.50
Cincinnati, No. 1	9.00 to 10.00
Cleveland, No. 1	12.00 to 12.25
Eastern Pennsylvania, No. 1	15.00 to 16.00
Pittsburgh, No. 1	12.00 to 12.50
Pittsburgh, No. 2	15.00 to 15.50
New York, No. 1 (dealers)	12.50 to 13.00
St. Louis, No. 1	13.00 to 13.50
St. Louis, No. 2	12.50 to 13.00

WROUGHT PIPE

Boston (dealers)	$7.00 to 7.50
Buffalo	9.50 to 10.50
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	7.75 to 8.25

YARD WROUGHT

Boston	$8.00 to 9.00
Eastern Pennsylvania, No. 1	13.00 to 13.50

CITY WROUGHT

New York, long	$10.25 to 10.75

BUSHELING

Buffalo, No. 1	$11.00 to 12.00
Chicago, No. 1	10.25 to 10.75
Chicago, No. 2	6.75 to 7.25
Cincinnati, No. 1	7.50 to 8.00
Cleveland, No. 1	9.50 to 10.00
Cleveland, No. 2	8.50 to 8.75
Eastern Pennsylvania, No. 1	11.50 to 12.50
Pittsburgh, No. 1	11.25 to 11.50
St. Louis, No. 1	10.50 to 11.00

MACHINE SHOP TURNINGS

Birmingham	$4.00 to 5.00
Boston (dealers)	4.50 to 5.00
Buffalo	8.00 to 9.00
Chicago	5.50 to 6.00
Cincinnati	4.00 to 4.50
Cleveland	9.00 to 9.15
Detroit (dealers)	5.00
Eastern Pennsylvania	11.00 to 11.50
New York (dealers)	5.00 to 5.50
Pittsburgh	10.50 to 11.00
St. Louis	6.00 to 6.50
Valleys	10.00 to 10.50

CAST IRON BORINGS

Birmingham (chemical)	$13.40
Boston (chemical)	9.50 to 10.00
Boston (dealers)	7.50 to 8.50
Buffalo	8.50 to 9.50
Chicago	7.50 to 8.00
Cincinnati	4.00 to 4.50
Cleveland	9.25 to 9.50
Detroit (dealers)	6.50 to 7.00
Eastern Pennsylvania	12.00 to 12.50
Eastern Pennsylvania (chemical)	15.00 to 16.00
Pittsburgh	11.50 to 12.00
New York (dealers' price)	7.00 to 7.50
St. Louis	7.50 to 8.00
Valleys	11.25 to 11.75

MIXED BORINGS AND TURNINGS

(For blast furnace use)

Boston (dealers)	$5.00 to 5.50
Cleveland	9.00 to 9.25
Eastern Pennsylvania	10.75 to 11.25
New York (dealers)	6.00 to 6.50

IRON AXLES

Birmingham	$20.00 to 21.00
Buffalo	26.00
Chicago	22.00 to 22.50
Cincinnati	16.50 to 17.50
Cleveland	19.00 to 20.00
Detroit	19.00
Eastern Pennsylvania	25.00 to 26.00
New York (dealers)	20.00 to 21.50
Pittsburgh	24.00 to 25.00
St. Louis	22.50 to 23.00

IRON RAILS

Buffalo	$17.00 to 18.00
Chicago	16.00 to 16.50
Cincinnati	11.00 to 12.00
Cleveland	13.50 to 14.00

PIPES AND FLUES

Chicago	$8.00 to 8.50
Cincinnati	4.50 to 5.00
Cleveland	9.00 to 9.50
Detroit	5.00 to 6.00
St. Louis	8.00 to 8.50

RAILROAD GRATE BARS

Buffalo	$12.00 to 13.00
Chicago	12.50 to 13.00
Cleveland	13.00 to 13.25
Detroit	8.00 to 9.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	9.50 to 10.00
St. Louis	12.50 to 13.00

FORGE FLASHINGS

Boston (dealers)	$4.50 to 5.00
Chicago, small	8.25 to 8.75
Cleveland, small	10.50 to 11.00
Cleveland, large	9.50 to 10.00
Detroit (dealers)	6.00 to 6.50

FORGE SCRAP

Boston	$4.50 to 5.00
Chicago	12.00 to 12.50
Eastern Pennsylvania, No. 1	10.00 to 10.50

ARCH BARS AND TRANSOMS

Chicago	$17.50 to 18.00
St Louis	19.00 to 19.50

ANGLE BARS—IRON

Chicago	$16.00 to 16.50
St. Louis	13.50 to 14.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	$4.75 to 5.25
Buffalo	11.00 to 12.00
Chicago	8.75 to 9.25
Cleveland	9.75 to 10.25
Detroit	7.00 to 7.50
Eastern Pennsylvania	10.00 to 10.50
Pittsburgh	11.50 to 12.00
St. Louis	8.50 to 9.00

STEEL CAR AXLES

Birmingham	$14.00 to 15.00
Boston (dealers)	11.00 to 11.50
Buffalo	20.00 to 21.00
Chicago	14.75 to 15.25
Cleveland	17.00 to 17.25
Eastern Pennsylvania	17.00 to 18.00
New York (dealers)	11.00 to 11.50
Pittsburgh	14.50 to 15.00
St. Louis	14.50 to 15.00

SHAFTING

Boston (dealers)	$13.00 to 14.00
Chicago	16.25 to 16.75
Eastern Pennsylvania	19.50 to 20.00
New York (dealers)	12.50 to 13.00
St. Louis	16.00 to 16.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$13.00 to 14.00
Birmingham, tram car	12.00 to 12.50
Boston (consumers)	14.00 to 15.00
Buffalo, iron	15.50 to 16.50
Chicago, iron	16.00 to 16.50
Cincinnati	11.50 to 12.00
Cleveland, iron	13.00 to 13.50
Detroit	11.50 to 12.00
Eastern Pennsylvania, iron	15.00 to 15.50
New York, iron (dealers)	11.00 to 11.50
Pittsburgh iron	15.50 to 16.00
Pittsburgh, steel	15.50 to 16.00
St. Louis, iron	15.50 to 16.00

NO. 1 CAST SCRAP

Birmingham, cupola	$16.00 to 17.00
Boston (consumers)	17.50 to 18.00
Buffalo	16.25 to 16.50
Chicago, cupola	15.25 to 15.75
Cincinnati, No. 1, machinery, cupola (net)	13.00 to 13.50
Cleveland, cupola	16.50 to 17.00
Eastern Pennsylvania, cupola	17.00 to 17.50
New York, cupola (dealers)	13.50 to 14.00
Pittsburgh, cupola	16.50 to 17.00
San Francisco	22.00 to 23.00
St. Louis, agricultural	16.50 to 17.00
St. Louis, railroad	17.00 to 17.50
Valleys	16.50 to 17.00
Detroit, machinery (net)	13.00

HEAVY CAST

Boston (consumers)	$15.50 to 16.00
Buffalo	14.00 to 14.50
Cleveland	12.25 to 12.50
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	13.00 to 13.50
Pittsburgh	15.00 to 15.50

MALLEABLE

Boston, railroad	$13.50 to 14.00
Buffalo	13.00 to 14.00
Chicago, railroad	13.50 to 14.00
Chicago, agricultural	13.50 to 14.00
Cincinnati, agricultural	8.50 to 9.00
Cincinnati, railroad	8.50 to 9.00
Cleveland, agricultural	11.00 to 11.50
Cleveland, railroad	13.00 to 13.50
Detroit	8.50 to 9.00
Eastern Pennsylvania, railroad	13.00 to 14.00
Pittsburgh, railroad	13.00 to 13.50
Pittsburgh, agricultural	11.50 to 12.00
St. Louis, agricultural	12.00 to 12.50
St. Louis, railroad	12.00 to 12.50

Miscellaneous Scrap

REROLLING RAILS

5 feet and over

Birmingham	$11.50 to 12.00
Boston (dealers)	9.00 to 9.50
Chicago	12.75 to 13.25
Cleveland	16.00 to 17.00
Detroit (dealers)	9.00 to 9.50
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	13.50 to 14.50
Pittsburgh district	15.50 to 16.00
St. Louis	13.00 to 13.50

LOCOMOTIVE TIRES

Chicago	$11.50 to 12.00
St. Louis	10.00 to 10.50

LOW PHOSPHORUS PUNCHINGS

Chicago	$12.50 to 13.00
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	15.50 to 16.00

The Deutsche Bergwerks-Zeitung is published in Essen, the heart of the German iron and steel industry. It is an influential paper, with important connections, and is read by the leaders of the German industry. Germany is but one of the many foreign countries in which the newspapers quote THE IRON TRADE REVIEW.

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"The Most Widely Quoted Trade Paper In The World"

Composite Market Record

Monthly Averages of Fourteen Iron and Steel Products, 1913-1922, Compiled by The Iron Trade Review

1922	
March 8	$32.86
March 1	32.81
Average for February	32.86
February 22	32.86
February 15	32.88
February 8	32.89
February 1	32.92
January	33.45
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year	40.74
1920	
December	54.04
November	63.75
October	68.61
September	69.28
August	68.93
July	$68.29
June	67.89
May	68.26
April	67.49
March	65.47
February	65.63
January	59.40
Average for year	65.59
1919	
December	54.88
November	51.28
October	48.76
September	48.35
August	48.27
July	47.86
June	47.88
May	48.29
April	48.45
March	52.28
February	53.71
January	53.81
Average for year	50.32
1918	
December	57.24
November	55.67
October	57.53
September	56.56
August	56.67
July	$56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10
1916	
December	53.68
November	46.77
October	41.50
September	39.97
August	$39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76
1914	
December	21.58
November	23.39
October	$22.84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.05
January	27.96
Average for year	26.32

Iron and Steel Statistics

Tin Plate Production

Year	Tin plate Tons	Terne plate Tons	Total Tons
1908	524,448	77,090	601,538
1909	589,929	95,465	685,394
1910	725,411	84,092	809,503
1911	798,814	79,221	878,035
1912	982,830	95,698	1,078,528
1913	854,093	68,472	922,565
1914	969,892	73,098	1,042,990
1915	1,100,913	81,735	1,182,648
1916	1,276,113	107,088	1,383,201
1917	1,616,658	76,946	1,693,604
1918	1,608,124	42,689	1,650,813
1919	1,203,579	85,427	1,289,006
1920	1,539,977	69,112	1,609,089

Sheet Production

Year	Tons
1913	1,921,001
1914	1,668,644
1915	2,106,298
1916	2,492,794
1917	2,595,606
1918	2,176,537
1919	2,316,057
1920	3,133,217

Plate Production

Year	Sheared Tons	Universal Tons	Total Tons
1913	1,844,354	1,158,416	3,002,770
1914	1,346,308	766,133	2,112,441
1915	1,923,199	954,852	2,878,051
1916	2,453,150	1,224,234	3,677,384
1917	2,963,039	1,195,199	4,158,238
1918	3,885,126	1,234,782	5,119,908
1919	2,899,967	992,054	3,892,021
1920	3,505,364	1,249,769	4,755,133

Shape Production

Year	Gross tons
1908	1,083,181
1909	2,275,562
1910	2,266,890
1911	1,912,367
1912	2,846,487
1913	3,004,972
1914	2,031,124
1915	2,437,003
1916	3,029,964
1917	3,110,000
1918	2,849,969
1919	2,614,036
1920	3,306,748

Bar Production

	Gross Tons		
Year	Iron Tons	Steel Tons	Total Tons
1908	685,233	1,301,405	1,986,638
1909	952,230	2,311,301	3,263,531
1910	1,074,163	2,711,568	3,785,731
1911	835,625	2,211,737	3,047,362
1912	944,790	2,752,324	3,697,114
1913	1,026,632	2,930,977	3,957,609
1914	563,171	1,960,460	2,523,631
1915	657,107	3,474,135	4,131,242
1916	993,948	5,236,354	6,230,302
1917	983,926	5,226,031	6,209,957
1918	846,898	5,395,851	6,242,749
1919	446,549	3,945,075	4,391,624
1920	663,032	5,467,208	6,130,240

Tube Production

Year	Iron	Steel	Total
1913	276,067	1,969,465	2,245,532
1914	212,147	1,525,557	1,737,704
1915	206,513	1,713,161	1,919,674
1916	278,117	2,372,941	2,651,058
1917	273,890	2,213,087	2,486,977
1918	202,958	2,087,521	2,290,479
1919	162,356	2,212,575	2,374,931
1920	199,673	2,803,052	3,002,725

Steel Rail Production

Year	Tons
1908	1,920,944
1909	3,023,845
1910	3,635,801
1911	2,822,556
1912	3,327,915
1913	3,502,780
1914	1,945,095
1915	2,204,203
1916	2,854,518
1917	2,944,161
1918	2,540,892
1919	2,203,843
1920	2,604,116

Freight Rates

Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.96
Newark, N. J.	6.72
Boston	7.28
Philadelphia	6.32
Pittsburgh	1.96
Chicago	5.32
St. Louis	6.44
Minneapolis, St. Paul	7.60
Buffalo to:	
Albany, N. Y.	$2.52
New England (rail)	5.46
New York and Brooklyn (rail)	5.46
Virginia furnaces to:	
Philadelphia	$5.74
New England	6.58
Brooklyn, Jersey City, Newark	6.16
Birmingham, Ala., to:	
Boston	$10.665
Boston (rail and water)	7.65
Cincinnati	4.50
Chicago	6.66
Cleveland	6.66
Louisville, Ky.	4.12
Minneapolis, St. Paul	9.73
New York	10.265
Philadelphia	8.665
Pittsburgh	7.60
Savannah, Ga.	4.25
St. Louis	5.725
Chicago to:	
Des Moines	$4.725
Minneapolis, St. Paul	3.375
Milwaukee	0.89
Moline, Ill.	1.89
Omaha	6.07
St. Louis	2.80
Ironton and Jackson, O., to:	
Chicago	$5.32
Cincinnati	2.52
Cleveland	3.36
Detroit	3.64
Indianapolis	3.22
Minneapolis, St. Paul	8.40

Finished Material

Pittsburgh, carloads, per 100 pounds, to:	
New York	$0.38
Philadelphia	0.36
Boston	0.405
Buffalo	0.295
Baltimore	0.35
Cleveland	0.24
Cincinnati	0.32
Chicago	0.38
Detroit	0.32
Minneapolis and St. Paul	0.66
Denver	1.32
St. Louis	0.475
New Orleans	0.515
Birmingham	0.765
Pacific coast (all rail)	1.665
Pacific coast (tin plate)	1.665